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Administrative Practice in the West

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STANDARDS of administrative practice have grown up in the East and have been determined very largely by eastern experience. This was no doubt inevitable. The distance from our mountain states to the various headquarters on the eastern seaboard precludes the attendance of western health officers at committee meetings. It may also be true that the typical western states have not pioneered in health administration and have not yet had much experience to offer.

In the result, however, certain factors have not received the attention that, from a western point of view, they deserve. The factor which has been most neglected is that of population per square mile and its corollary factor is wealth per square mile.

An example will make this clear. An advisory committee to the U. S. Public Health Service, representing in its membership Chicago, Baltimore, Boston, Philadelphia, New York, Ann Arbor, and Washington, D. C., recommends [1] that venereal disease control work requires in the state health department a separate section or subdivision under the direction of a full-time officer. They even recommend that each health district should include the same provision. It is hardly conceivable that this committee could have considered or even imagined a state like New Mexico with a population of 394,863 most living at or below the level of bare subsistence and scattered over 122,635 square miles.

Despite its poverty, New Mexico probably spends more per capita on health services than most of its immediate neighbors, and it is one of only 3 states in the Union that have provided full-time public health service for all of their citizens. To do so it has had to lay down some original standards and these are hereby offered not in the belief that they are ideal but simply as a measuring rod for those who in the future may attempt to evaluate practice in the wide open spaces of the West.

Table I shows the population, assessed valuation, estimated income, and approximate area of each of the 10 health districts of the state. The column of income is included to permit comparison with the standard laid down by Smillie [2] that $10,000,000 is the minimum wealth necessary to support a full-time *county* unit. It will be seen that 2 of our districts fall short of this minimum income (estimated by the same method used by Smillie). On the other hand, the

TABLE I

WEALTH AND AREA OF NEW MEXICO HEALTH DISTRICTS

Dist. No.	Counties Included	Population †	Assessed Valuation	Income *	Approximate Area
I	Rio Arriba, Santa Fe, Taos	52,588	$21,549,280	$15,776,400	10,096
II	McKinley, San Juan	17,612	15,405,429	5,283,600	10,982
III	Bernalillo, Sandoval	52,538	29,833,946	15,761,400	5,085
IV	Doña Ana, Lincoln, Otero, Sierra	48,908	34,407,134	14,672,400	18,407
V	Guadalupe, Mora, San Miguel	40,985	24,858,337	12,295,500	9,779
VI	Chaves, Eddy, Lea	41,535	34,869,400	12,460,500	14,665
VII	Grant, Hidalgo, Luna	30,320	34,322,816	9,096,000	10,404
VIII	Catron, Socorro, Torrance, Valencia	35,124	26,853,345	10,537,200	24,098
IX	Colfax, Harding, Union	34,614	32,179,622	10,384,200	9,789
X	Curry, De Baca, Quay, Roosevelt	40,639	30,724,524	12,191,700	9,198

* Total income of population assuming a per capita income of $300
† 1930 Census

maximum area allowed by the same authority for a health district is 1,000 square miles. The areas of our districts are from 5 to 25 times greater than the maximum acceptable to eastern administrators.

Obviously the district health officer cannot be expected to visit every case

TABLE II

PERSONNEL AND APPROPRIATIONS, NEW MEXICO HEALTH DISTRICTS
ASSUMING SUBSIDY FROM SOCIAL SECURITY ACT

				Number in Personnel					
				Full-time				Part-time	
	Director								
Dist. No.	Name	Professional Degree	Date Operations Began	Medical Officers	Inspectors	Nurses	Clerks	Medical Officers	Clerks
1	E. F. McIntyre	M.D.	7- 6-35	1	1	3	3	..	..
2	E. B. Beaver	M.D.	7- 6-35	1	1	2	1	..	1
3	J. R. Scott	M.D.	7- 1-35	1	3	4	2	..	..
4	C. W. Gerber	M.D.	7- 1-35	1	1	5	1	2	3
5	W. W. Johnston	M.D.	8-18-35	1	1	3	3	..	..
6	O. E. Puckett	M.D.	7- 1-35	1	1	3	2	2	1
7	F. W. Parker	M.D.	7- 1-35	1	1	3	1	1	2
8	J. O. Long	M.D.	7-15-35	1	1	6	4	1	..
9	F. C. Diver	M.D.	10-18-35	1	1	3	3	1	..
10	L. A. Dewey	C.P.H., M.D.	7-18-35	1	1	2	2	..	..

			Annual Appropriations Appropriated by Coöperating Agencies					
Dist. No.	Director Name	Total Budget	County	State	U.S.P.H.S.	Children's Bureau	Commonwealth Fund	Other Agencies
1	E. F. McIntyre	$14,720	$10,820	...	$3,900	....	....	1 clerk
2	E. B. Beaver	14,055	8,845	...	4,500	....	$710	....
3	J. R. Scott	21,870	16,630	...	4,500	....	740	....
4	C. W. Gerber	25,720	18,920	$200	5,700	....	900	....
5	W. W. Johnston	17,485	12,985	...	4,500	....	....	....
6	O. E. Puckett	18,400	12,060	...	5,100	....	....	$1,240
7	F. W. Parker	19,180	11,680	...	5,100	....	2,400	....
8	J. O. Long	25,415	15,275	...	5,100	$5,040	....	1 clerk
9	F. C. Diver	16,595	10,955	65	4,500	....	710	$365
10	L. D. Dewey	14,560	10,060	...	4,500	....	....	....
Totals		$188,000	$128,230	$265	$47,400	$5,040	$5,460	$1,605

of communicable disease occurring in such vast districts, nor can he expect any special aid from a large number of supporting personnel. Table II shows the number of such personnel assigned to each district and including those subsidized by Title V (Fund A) and Title VI of the Security Act. There are certain situations which must be investigated whatever the inconvenience and whatever the distance to be traveled. We are engaged in finding out for ourselves exactly which situations can be considered as obligatory responsibility within the framework of physical conditions imposed upon us.

Table II also shows the total contribution from tax moneys to local health work. Add to this $51,600 contributed to the state health department and $18,000 contributed in the present fiscal year to the district health officers' fund which will be carried over into the next fiscal year and therefore does not appear in the above table, and we have a per capita expenditure from taxes for health of $.50. This amount can be increased even in a poor state which has adopted a constitutional ceiling of 20 mills taxation on property. But obviously it can only be increased by great pressure and to a limited extent.

The State Health Department has no separate division in charge of (1) food and drugs, (2) dentistry, (3) industrial hygiene, (4) tuberculosis, (5) syphilis, (6) maternity and child hygiene, (7) cancer control, (8) mental hygiene. There are pressure groups, some large, some small, working for the inclusion in *every* state health department of each of these sub-divisions. We do not question the desirability of reinforcing our central organization in this way, but looking at the cost of such reinforcement and looking again at the skeleton crew that is manning our health districts, where the real spade work of public health is being done, we are bound to pause. We believe that if eastern committees will look at the same picture they will pause too.

It is admitted that the picture could be changed by federal subsidies on a much larger scale than those granted under the present Security Act. The uncertain and spasmodic generosity of the national Congress poses administrative conundrums to all state health officers and is a more serious affliction to western health officers only to the extent that intermittent charity can be more tantalizing when the stomach is habitually empty than when it is assured of regular though limited provender.

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1. *J.A.M.A.*, 106:115 (Jan. 11), 1936.
2. Smillie, Wilson G. *Public Health Administration in the United States.* Macmillan, 1935.

NOTE: The above article was prepared early in 1936, before definite allocations under the Social Security Act were known. The actual allocations have been somewhat higher than those assumed in this article with the result that part-time clerks have been turned into full-time clerks and some other minor additions made to the local staffs. Also a division of maternal and child health has been established in the central administration.

Modern Trends in Nursing Education

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NURSING education is undergoing drastic changes. History repeating herself through a new social expression has kept consistently in step with the development and progress in related fields of life activity. The demand today for a different preparation for the nurse, general and professional, is a demand not of the idealist but of the times.

It is hardly necessary to trace the evolution of nursing practice from an age-old emotional expression in response to human suffering to the present-day three-dimensional demand that adds to succor the technics required for curative medicine and a program of health education for nursing in relation to preventive medicine—the third immeasurably extending the scope of activity and the social contribution of the profession.

It is said that the Americans have no plan. This I question. Consciously and unconsciously, Americans are adhering to the slow but sound democratic principle of social growth and development, namely, education of the entire population as the *sine qua non* of efficient citizenship, the cornerstone of which is physical fitness.

In no country are there greater opportunities for the realization of the "American dream—that belief in the right and possibility of a better life for all." Institutions of higher education open wide doors through which, in ever increasing numbers, the youth of the country seek fullest preparation for their chosen life activity, and throughout the country highly equipped health and social organizations and institutions offer almost unlimited opportunities, and enough graduates of the varied types of social worker to provide the personnel demanded for adequate care and direction of the people, and for the instruction and practical experience of students in their related fields.

The opportunity of the nurse in the field of health education is now generally conceded, and for such function, emphasis has been laid on the preparation of a special group designated as public health nurses. Financial provision, however, for the practice of this group, either by private philanthropy or governmental appropriation, is entirely inadequate to meet the needs of the population, whether rural, urban, or suburban. Approximately 20,000 public health nurses are now engaged in a field that 100,000 would not adequately cover. A tragedy of the day is the inadequate employment in the medical and nursing professions, the uncared-for sick, and the unattended births in the community—the latter deplorable in a century so informed on the importance of the birth episode through its influence on the mother and child and, *ipso facto*, the future generations. Fortunately there is today an awakening appreciation of the contribution

that might be made in the field of preventive medicine by this numerically strongest division of health workers, through a curriculum shaped not for a selected group but for the entire profession.

That courses in the newer sciences, sociology, psychology, psychiatry, as well as in the physical sciences, are essential for this wider interpretation of practice, either as prerequisites or in the professional curriculum, is not open to question. The content of such courses in their application to the particular field requires much study and experimentation. The same may be said of the various branches of clinical medicine, some experience in each of which is of utmost importance if the practice of the nurse is to extend through the field of curative medicine into that of preventive medicine, as it obviously should, since the opportunity of this practitioner for health education through her intimate and sometimes prolonged association with the patient and the family equals, may even exceed, that of the public health nurse.

This expansion of function in half a century of organized existence presents a problem of curriculum readjustment greatly complicated by the conditions governing schools of nursing. The first schools in this country, established on the Nightingale plan, were conceived as separate units, though closely allied to the institutions providing a practice field. The profession, however, early lost its integrity and educational freedom by the establishment throughout the country of these schools as integral departments of the hospitals—with the asset of assured support, but the predictable result, in large measure, and in many cases entirely, of the subordination of the educational program to the needs of the nursing service rendered by the student body.

The values accruing, despite the palpable defects of the educational program, are recognized, but the insistent and increasing demands from the rapidly developing field of public health for nurses equipped to meet the health as well as the sickness needs of the community could not be disregarded. The League of Nursing Education, therefore obtained a grant from the Rockefeller Foundation that made possible the first study ever undertaken, which was directed by Josephine Goldmark, in coöperation with a representative committee of which C.-E. A. Winslow, Dr.P.H., was chairman. The findings were published in 1921 under the title "Nursing and Nursing Education in the United States." Originally conceived as a study of the supplemental subject matter required for public health nursing, a superficial survey of the undergraduate courses left no question as to the need of a searching investigation of the basic professional preparation. It was determined to extend the study to include the courses offered in 15 selected schools.

This study, a classic that will stand the test of time, was shortly followed by a more comprehensive undertaking, the purpose of which was indicated by the designation of the advisory body as the Grading Committee. Again the problems involved deflected the original intent into other channels. The first report, prepared by Dr. Burgess, a highly qualified statistician, was entitled "Nurses, Patients, and Pocketbooks." This presented to an astonished public a yearly outpouring from 2,000 schools of nursing of a graduating body that had already brought the ratio of nurses to population in some states as high as 1 to 300, and that would multiply by compound interest to an astounding figure in a comparatively few years. The report further presented the low level of general education; inadequate teaching facilities as expressed in the number and preparation of instructors; theoretical and

clinical content of curriculum and teaching equipment; and other factors bearing directly or indirectly on the preparation of workers for a field of acknowledged social importance.

Under the caption "Nursing Schools Today and Tomorrow," the Grading Committee published in 1934 a report on its further findings, but did not feel it possible to fulfil the complex task for which it was created. It is a reasonable question whether, without changes acknowledged as essential but far from achieved, grading or accrediting of the schools on so unstable a basis as now exists is advisable, despite the obvious need of reliable information for candidates. The National League of Nursing Education, through its Standards Committee and in conference with experts in education, medicine, and nursing, is studying the problem and will undoubtedly develop a plan which will clarify the situation through some form of classification.

The influence of these reports was evidenced by a steady decrease in the number of schools, and the advancement of the educational requirement for admission to completion of high school, reported as 90 per cent in the second and last publication of the Grading Committee.

Concurrently with the studies of the Grading Committee in this country, studies of nursing and nursing education were conducted in England by the *Lancet* Committee, and in Canada, under the supervision of the Canadian Medical Association and the Canadian Nurses Association, by G. M. Weir, Professor of Education in the University of British Columbia. The latter brought out the most comprehensive, sympathetic, and constructive discussion of the subject that has yet appeared.

It is not necessary to discuss in detail the defects revealed in the present system of nursing education. The number of schools still existing, approximately 1,500, is suggestive of the situation, without the very definite evidence of inadequate instruction, inadequate clinical experience, and hours of physical and mental output generally conceded as detrimental to health—in short, an educational interpretation out of step with present-day social conditions, educational methods, and scientific conclusions.

Through these several studies the profession now has a foundation of facts and analyses upon which to base future plans and programs, and through which the values intrinsic in the traditional type of nursing education may not be lost, but deepened and broadened by the vitalizing current of scientific findings bearing on the human organism. To these studies also must be attributed the very definite tendency to effect connections between schools of nursing and institutions of higher education.

This trend in the United States toward a higher level of general education and a more comprehensive professional preparation, supported by the unequivocal pronouncement of the Canadian Survey of Nursing Education, and the trends in several countries on the European Continent, leave little question as to the ultimate release of the hospitals from a burden that should never have been imposed. The curriculum in preparation for nursing in the new field of preventive medicine demands that these schools find their place in the educational system of the country, and that as definite a relation to the institutions of higher education is imperative as obtains for the allied branches of medicine, nutrition, pharmacy, dentistry, and social service. No less than for the education of the community should the State assume responsibility for its health. Privately endowed or supported schools or departments would still continue but, as in the case of other professional and voca-

tional courses in these institutions, tuition fees would be required, while working scholarships, as in other branches of the arts and sciences, could and should be made available for desirable candidates during their clinical and field experience.

Though as early as 1910 the University of Minnesota had authorized the establishment of a school of nursing as a department of the School of Medicine, this control, unfortunately, hardly less than that of the hospital, subordinated the students' program of study to the demands of the affiliated hospitals for nursing service. Had the principles and provisions clearly defined by Richard Olding Beard, M.D., to whose vision this step was attributable, been adhered to, the university relationship would have had even greater significance, for it would have established as essential for sound practice the right of schools of nursing to the academic freedom accorded other professions in the development of their program of study, and through the provision of an adequate graduate nurse staff for the affiliated hospitals, insured the student the educational value of the clinical experience.

In 1934 the League of Nursing Education published a list of 136 schools connected with universities. It is understood that 165 of the 400 Catholic schools of nursing are affiliated with Catholic colleges. In many cases, both from the academic and professional standpoints, the connection is but in name. While a number of schools have been accepted as integral units of universities or colleges, the variations in the entrance requirements and the professional curriculum are great. For instance, 2 university schools require a Bachelor's degree from an accredited college for the basic course which leads to a degree of Master of Nursing; a number of the schools require 1 or 2 years of college work for admission, while others still adhere to the completion of 4 years of high school.

Highly desirable as is the movement, the effecting of the connection of schools of nursing with institutions of higher education calls for study and direction, and to meet this demand the Association of Collegiate Schools of Nursing was recently created, the objects of which, as set forth in the constitution, are as follows:

1. To develop nursing education on a professional and collegiate level
2. To promote and strengthen relationships between schools of nursing and institutions of higher education
3. To promote study and experimentation in nursing service and nursing education

In order to extend its usefulness as widely as it consistently could, provision was made by the Association for two classes of membership, active and associate. Briefly stated:

Active membership is open to an accredited school of nursing established as a constituent part of an accredited college or university.

Associate membership is open to accredited schools of nursing, the curricula of which meet the standards set by the Association of Collegiate Schools of Nursing, and that maintain a relationship with accredited colleges or universities through which their resources and facilities are available for the students.

This association, now accepted as a constituent member of the American Council on Education, has on its list the following schools and departments of nursing:

ACTIVE MEMBERS OF THE ASSOCIATION OF COLLEGIATE SCHOOLS OF NURSING

Skidmore College School of Nursing, Saratoga, N. Y.

Yale University School of Nursing, New Haven, Conn.

Catholic University Department of Nursing Education, Washington, D. C.

George Peabody College for Teachers, Department of Nursing Education, Nashville, Tenn.

St. Louis University School of Nursing, St. Louis, Mo.

Syracuse University, Department of Public Health Nursing, Syracuse, N. Y.

Teachers College, Columbia University, Department of Nursing Education, New York, N. Y.

University of Oregon, Department of Nursing Education, Portland, Ore.

University of Virginia, School of Nursing Education, Charlottesville, Va.

Washington University School of Nursing, St. Louis, Mo.

Simmons College School of Nursing, Boston, Mass.

University of California School of Nursing, Berkeley, Calif.

University of Washington School of Nursing, Seattle, Wash.

Vanderbilt University School of Nursing, Nashville, Tenn.

Western Reserve University School of Nursing, Cleveland, Ohio

ASSOCIATE MEMBERS

Duke University School of Nursing, Durham, N. C.

Rochester University School of Nursing, Rochester, N. Y.

St. Louis University School of Nursing, St. Louis, Mo.

University of Michigan School of Nursing, Ann Arbor, Mich.

University of Oregon, Department of Nursing Education, Portland, Ore.

Washington University School of Nursing, St. Louis, Mo.

Be the selected field of her practice where or what it may, every nurse needs, as an individual, as a citizen, and as a practitioner of vital social importance, a liberal education in the fullest interpretation of the term. It is frequently asserted that so prolonged and comprehensive a preparation is not justified by the rewards in nursing as expressed in financial returns, satisfactions accruing through the services rendered, and the hours of physical output. To all these arguments the reply, based on any study of human responses, should be that the higher educational level, through the stimulation of the social and physical sciences, brings an inquiring and resourceful mind to the task—a type of mind that "seeing that which is invisible" overlooks—often too greatly overlooks—conditions that early become unbearable to the arid mind of the mechanized product of a program of education that limits knowledge to the required technics. The stultifying influences of the sometimes unpleasant procedures, repetitive almost to the point of revolt, can only be overcome by an interest and purpose that holds the attention above the drudgery of the means through which the desired end must be achieved.

But is there any life activity of which this is not the case? Furthermore, in any activity in which science is concerned—and there are few in which it is not—these very procedures often assume undreamed of significance. The failure to admit the desirability of a scientifically oriented individual for the part assigned the nurse—this connecting link between the investigator and the organism with which they are mutually concerned—is difficult to understand in the light of present-day scientific knowledge and social conditions.

In view of the unemployment of the country's greatest asset, her youth, now expressed in millions; the unemployed qualified teachers; the unemployed graduate nurses; and the ever shortening span of working years; there is little excuse for the failure to require for all workers a program of education through which the country may be better served, and their own lives enriched. In the field of nursing itself there is a wealth of dormant interest awaiting the specialists who will soon supplant the outmoded classification of private duty, institutional, and public health nurse. I refer to the specialists in nursing in surgery, medicine, nervous and mental diseases, obstetrics, and pediatrics, branches which

again fall into sub-divisions requiring for the nurse, no less than the physician, a highly specialized body of knowledge and skills.

The syntheses demanded for efficient result in the field of health can be achieved only through the intelligent, collective will of the army of health workers, specialists in their own field, but all versed in scientific concepts, scientific methods, and scientific terminology, motivated by a unified objective. That such coördinated, coöperative programs be developed was the pronouncement of the Committee on Medical Care for the American people.

An important step, and one that further emphasizes the need of broadening the content of nursing education, is the effort to persuade nurses, professionally so highly organized, to organize for service through local community programs based on the needs of and open to the entire population. To this end the national nursing organizations have recently appointed a committee that has outlined as basic the following principles:

1. That a responsible group, representing the nursing profession, the medical profession, and such lay groups concerned with nursing as hospital boards, schools of nursing committees, boards of public health nursing agencies, etc., work out plans in each community for a community nursing program.
2. Analyzing community nursing problems include:
   a. How much nursing care is needed for different types of situations
   b. What are the present facilities
   c. What are the gaps and duplications as shown by "a" and "b"
3. Meeting community nursing needs involves:
   a. Reducing the number of agencies which distribute nursing service to as few agencies as possible and providing one coördinating agency through which all types of nursing service may be obtained
   b. An understood relationship and division of responsibility between the various nursing facilities
   c. A concerted effort to fill in gaps and eliminate duplication
   d. The establishment in every community of some type of machinery for supplying nursing service

In the Canadian Survey of Nursing Education will be found a comprehensive and suggestive consideration of municipal support and administration of community nursing service.

Of wider significance than is at first apparent are these 2 progressive steps—the attainment for schools of nursing of the rights and privileges of higher education; and the integration, for local community service, of the contributions of the members of the nursing profession.

The national and international significance of the health movement, to the furtherance of which throughout the world American citizens have so greatly contributed, cannot be overestimated, and not only through the prevention of disease that takes no cognizance of national boundaries, but through the underlying emphasis on the value of every human life as such, provided only that through heredity and environment the organism shall be well born.

Through an International Council of Nurses, American nurses have long since established professional relationships on all continents. Through the Division of International Studies of the Rockefeller Foundation, nurses from many countries have been enabled to study—through undergraduate and graduate courses, and through visits to American institutions and organizations—nursing education and nursing service in the United States. It is eminently fitting that the International Council of Nurses and the League of Red Cross Societies should unite to establish a Florence Nightingale Memorial Foundation, and that this memorial should take the form of courses for international students under the auspices of the University of London in coöperation with the hospitals and social or-

ganizations of the city in which was offered the first and world renowned professional program of nursing education. Never in the history of the world was there a more timely moment to further a project so consistently expressive of the potential value of every human life.

As in all professions, the responsibility for the interpretation of function, and the acquirement of the educational content demanded for the fulfillment of such function, rests upon nurses themselves. However obscured may be the public's understanding of the part of nursing in social reconstruction, nurses themselves, to whom the mental, physical, and social crippling of humanity is an open book, cannot plead ignorance, but, as an inalienable right, should demand the educational content through which their most effective service may be rendered and the means through which such service may be universally available. Not less than for their educational needs should the country assume responsibility for the health of her children.

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The Medical Profession

I SAID our profession was a holy office on the same level as that of the priest if not higher, where surplus money-making should be forbidden by law. The doctors should be paid by the State and well paid like the judges in England. Those who did not like this arrangement should leave the profession and go on the Stock Exchange or open a shop. The doctors should walk about like sages, honoured and protected by all men. They should be welcome to take what they liked from their rich patients for their poor patients and for themselves, but they should not count their visits or write any bills.

What was to the heart of the mother the value in cash of the life of her child you had saved? What was the proper fee for taking the fear of death out of a pair of terror-stricken eyes by a comforting word or a mere stroke of your hand? How many francs were you to charge for every second of the death-struggle your morphia syringe had snatched from the executioner? How long were we to dump on suffering mankind all these expensive patent medicines and drugs with modern labels but with roots sprung from medieval superstition? We well knew that our number of efficacious drugs could be counted on the ends of our fingers and were handed to us by benevolent Mother Nature at a cheap price.—Axel Munthe, *The Story of San Michele*, 1930.

Santa Cruz Community Health-Social Center

Community Public Health Nursing in the Philippine Islands

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PUBLIC health and welfare work in the Philippine Islands has been supervised by Americans during the entire period of more than 35 years of American occupation. During recent years supervision has been exercised by an American Governor-General, an American cabinet member, and an American technical adviser. On November 15, 1935, when the new Commonwealth Government was inaugurated, control by Americans, or by the United States Government, of health and welfare activities ceased. The public health nursing work described in this article represents the latest and the final move made by the former government to advance the cause of public health and welfare in the Islands.

Manila is a city of approximately 350,000 inhabitants. It is an oriental community in which the wealthier people maintain a standard of living similar to that prevailing among the same class in occidental countries, but where the poorer class lives on a standard but little if any above that obtaining for similar groups in other oriental cities.

The average family living in Manila must have a family income of at least 30 pesos ($15 gold) per month in order to maintain the minimum normal standard of living. While no census has been taken, it is estimated that at least 10,000 families living in Manila have a family income of less than 30 pesos a month and that of these families at least 6,000 have a family income of not more than 15 pesos ($7.50 gold) a month. As in all cities, the families having an abnormally low standard of living have been crowded into the less desirable portions of the city where they live in a slum environment and under adverse social conditions.

Prior to 1934, no public health

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A nurse visiting a home in Tondo slums

nursing service was available for the slum population of Manila, and there was no other agency by which instruction in health matters could be given to these people in their own homes. Consequently, but little if any progress was being made in the control of such diseases as tuberculosis, malnutrition, or intestinal parasitism. As only very meager facilities were available for the promotion of maternal and child health work among the members

A nurse showing a mother how to care for a sick child in a typical native home. The bamboo platform is the bed. Note the swinging bamboo cradle.

of this group, the infant mortality rate remained high, with no prospect of its being reduced.

The Bureau of Health of the Philippine Government has maintained a public health nursing service for a number of years, but prior to 1933 the bureau was so organized that such service was entirely inadequate. However, a reorganization of the health and welfare activities of the government which became effective on January 1, 1933, made it possible for public health nursing service of the bureau to be extended and coördinated with the other activities of the bureau. Following the reorganization, studies and surveys were made which showed that under the conditions existing in Manila a combined public health nursing service and social service offered the most feasible method of solving the public health problem discussed above. Consequently, the Bureau of Health developed a program of public health nursing and social service to meet the urgent need for health work in the homes of the poor people living in the congested districts of the city.

The fundamental principles of public health nursing are, of course, the same in Manila as they are in occidental countries, but the methods employed in applying these principles are modified by the local environmental factors and customs. The climate is tropical. The great majority of the houses of the poorer class are nipa huts, constructed of bamboo and roofed with nipa—the so-called light material houses. A smaller group of this class of the population live in stone, brick, or wooden houses, usually known as strong material houses.

The dietary customs of the people constitute a serious health problem. The poor people subsist mainly on rice and fish with an inadequate quantity of fresh vegetables or fruits. Moreover, rice and fish are the preferred articles of diet, and the exclusion of other foods from the diet is frequently due to custom, and not entirely to poverty. Because of the defective diet, conditions due directly or indirectly to malnutrition are prevalent, particularly infantile beriberi and a lowered resistance to tuberculosis and other infectious diseases.

Family ties are strong among the Filipino people, and in many instances the family group is enlarged by relatives other than the immediate members of the family. The result is that the nipa huts, or the rooms of the strong material buildings, are crowded, with the consequent adverse health and social effects.

Because of the climatic conditions and poverty a large proportion of the children, and the adults as well, of the poor families do not wear shoes, or do so only at intervals. Consequently, infestation with hookworm is prevalent. Also, the customs which govern the preparation and handling of the food result in a high rate of infestation with ascaris. Surveys show that about 85 to 90 per cent of the population are infested with hookworm or ascaris, or both.

In order to meet this situation, community health centers were established in the affected districts, known as community health-social centers. The community health-social center, as it is conducted in Manila, is an agency designed to provide a combined health and social service, with the family as the unit served. The nursing and social service personnel consists of nurses trained in public health nursing and in social work. The clinics are conducted by physicians, each of whom has had special training in the particular work concerned.

Each center is composed of 4 basic sections, with such additional activities as may be required by local conditions. These sections are: social rehabilitation,

1. Model houses, part of the housing project in connection with Tondo Community-Social Center. 2. Nurse visiting a home of nipa construction. 3. Nurse visiting a home on Manila waterfront. 4. A corner in the Tondo slums.

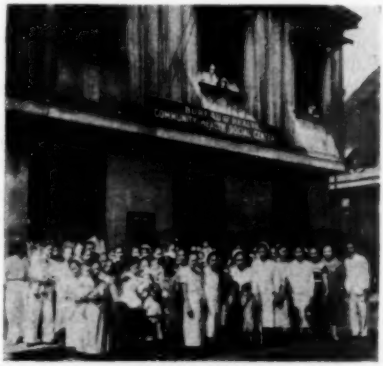
child and maternal health, tuberculosis, and the general dispensary. A dental service is also provided for each center.

The basic functions of a community health-social center are the operation of clinics at the center and a home visiting service. There is a general clinic for the treatment of all kinds of cases; postnatal and prenatal clinics; a tuberculosis clinic; clinics for infants, and well baby clinics. These are held daily or at scheduled intervals. All service is free.

Home visiting by nurses is considered to be the most important activity of a community health-social center, because the fundamental function of the center is to carry health and social services into the homes of the people. The clinics conducted at the center are secondary in importance to home visiting.

In the operation of the home visiting services, the quality rather than the volume of the work performed is emphasized. This must be so if good results are to be obtained under the prevailing conditions. Follow-up work is essential to success and the nurse must visit a home many times in order to obtain the desired results. Ignorance is rife and many conditions favorable to the spread of disease prevail in the homes. Customs inimical to health must be changed. Finally, the mother rules the Filipino family in all matters that pertain to the home, and the mother must be taught in her own home how to protect the health of her family.

In order to insure that the home visiting work will be effective, the district served by a center is limited geographically to that which can be covered efficiently by the nurses available. Each nurse is assigned to a zone within this district and she is responsible for the home visiting work within that zone. The case load for a nurse is limited to the number of families which can be served effectively under the local conditions—usually an average of 10 home visits per day. The nurses do not make visits outside the geographical limits of the center districts. Experience has shown that when this is permitted the quality of the service rendered deteriorates.



Patients and personnel at the San Nicolas Community Health-Social Center

The centers are also utilized for the dissemination of instruction in health matters to groups, especially to mothers. Group instruction in prenatal and postnatal care and in the care of infants is given to pregnant women by trained workers. Cooking classes are held at regular intervals where practical instruction is given not only in cooking, but also in other phases of nutrition. Training in simple sewing is also provided for mothers. Reading and writing are taught to illiterate adults. Kindergarten classes are provided for the children of poor families as a means of attracting the parents to the center and obtaining their coöperation.

In 1934 sufficient funds were obtained from various sources for the operation of two community health-social centers. One was located in the Tondo and the other in the San Nicolas slum districts of the city. These centers were more or less experi-

mental in nature, particular attention being given to the development of procedures and technics adapted to local conditions. The success attained by these two centers during 1934 induced the Legislature to include the sum of $45,000 (90,000 pesos) in the budget of the Insular government for the operation of community health-social centers during 1935. A like sum has since been appropriated in the insular budget for 1936. The appropriation of funds as budgetary items instead of by a special act means that the appropriating authorities recognize that the work is a permanent activity and that it should be continued from year to year in the future. With the additional funds two other community health-social centers were established in the congested districts of Manila in 1935—making four in all. The new centers were located in the Santa Cruz and the Sampaloc slums.

The normal duty staff of each of the centers, as they are now organized, consists of 3 full-time physicians, 1 half-time physician who is a specialist in tuberculosis, 10 nurses, and the necessary attendants. One of the physicians serves as chief of the center, and 1 of the nurses as chief nurse. There is also the chief of the centers who is a physician trained in public health and sociology and who supervises the technical and administrative activities of all the centers in order to secure uniformity of procedure and coördination of all activities. He is assisted by a chief nurse for all the centers.

The objective of the work of the community health-social center is to effect the health and social rehabilitation of the family. Among the poor people of the Philippines the margin between destitution and a degree of prosperity which will permit the family to have a normal standard of living is so narrow that health work cannot be separated from social service. Frequently, in order to effect improvement in the health of a family, it is necessary to rehabilitate the family economically and socially. Material relief in the form of food or money may be required. It may be necessary to obtain better housing conditions, or to find employment for a member of the family. If this is not done the health measures which might be undertaken will have but little effect. Under these conditions, health work and social service must go hand in hand and the family as a whole, not the individual member of the family, must be regarded as the case.

The Tondo community health-social center is also a training center for nurses who are to be assigned to public health nursing work in other centers or in the provinces. The training consists largely of practical field work in public health nursing and social work. The center is provided with additional personnel for this purpose.

Table I shows in summary form the work that has been done by the community health-social centers in Manila during the 9 months, January 1, 1935, to September 30, 1935.

The work of the community health-

TABLE I

WORK PERFORMED BY THE FOUR COMMUNITY HEALTH–SOCIAL CENTERS IN MANILA DURING THE PERIOD OF JANUARY 1, 1935, TO SEPTEMBER 30, 1935

	Tondo	*San Nicolas*	*Sta. Cruz*	*Sampaloc*	*Total*
Number of families registered	4,073	3,474	3,527	3,417	14,491
Number of visits to homes	11,223	10,129	10,279	8,890	40,551
Number of individuals attending the center clinics	40,134	26,317	29,008	24,082	119,501

social centers in Manila has also influenced the development of a public health nursing service in the provinces. The Legislature appropriated the sum of $85,000 (170,000) pesos) for this activity in 1935 and a like sum for 1936. These appropriations were also made as budgetary items, and it is probable that they will be continued in the future. Public health nurses have been sent to 149 of the more backward barrios (villages) in the provinces and in addition 26 supervising nurses have been assigned to supervise and guide the barrio nurses. This work has been started only during 1935.

Antityphoid Inoculation

". . . During the Great War antityphoid inoculation by the subcutaneous route was a proved success; the incidence of enteric fever amongst the inoculated was little, whereas the uninoculated suffered severely. Oral vaccination against typhoid fever is now having a considerable vogue and yielding in some areas a more or less satisfactory experience. It is too soon to compare the relative values of oral and of subcutaneous methods of antienteric vaccination, because the former has not had the extensive field trials of the latter. Whatever value oral immunization may ultimately be proved to have, it is certain that subcutaneous inoculation has a definite methodical advantage, *i.e.*, dosage; in attempted oral immunization imperfect absorption of the antigen from the alimentary canal must occur frequently.

"I have encountered typhoid fever in persons 'immunized' comparatively recently with Besredka's typhoid pills *per os*. On the other hand, during the Dardanelles campaign I saw practically no true typhoid fever although there was every opportunity for its spread. The troops in the area had been inoculated in 1915 with antityphoid vaccine only, and not with triple (T.A.B.) vaccine, which fact accounted for the comparatively high incidence of paratyphoid fevers and the absence of typhoid fever itself. In 1916, when we returned to Egypt from Dardanelles, T.A.B. vaccine became generally available to us. Subcutaneous injection of this triple vaccine had the effect of eliminating almost entirely both typhoid and paratyphoid fevers. . . ."—William Campbell, B.Sc. (Public Health), M.B., Ch.B., F.R.S. Some Public Health Aspects of Immunity. *J. Roy. San. Inst.*, June, 1936, p. 815.

Lead Pipes as a Source of Lead in Drinking Water

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THE literature is quite replete with reports of lead poisoning, and not the least common source is water. In some instances the occurrence of lead poisoning from water has been so extensive as to be spoken of as an epidemic. The reported occurrences seem to be most numerous for Europe, and in the United States for the New England states. It is common knowledge that the use of lead pipes in connecting the mains to the domestic pipe lines is a usual practice. Furthermore we are aware of the fact that in some communities, many domestic service pipe lines are of lead throughout.

It seems entirely plausible that the sporadic cases of lead poisoning, and possible illnesses that are not diagnosed and recorded at all, may be due to a number of circumstances connected with lead service pipes. If water is permitted to remain at rest in a lead pipe, the quantity of lead dissolved is definitely increased—the time allowed may be only over night, a week end, a week, or it may be months. In any event, does the occupant of a dwelling, deliberately and methodically flush the line to the extent that practically all the excess dissolved lead is removed before a drink is drawn? If such precaution is not taken, it seems entirely possible that that portion of water standing in the lead pipe, even though it be only the connecting link between main and domestic line, may just reach the faucet in time to empty into a drinking glass.

In this investigation, an attempt has been made to simulate the actual conditions extant in our water supply systems. Samples of water have been permitted to remain in contact with lead pipes for varying periods of time, much as would be the case if the occupant of a dwelling were absent and upon his return would remove the water, perhaps for drinking.

EXPERIMENTAL

The methods of analysis adopted by the authors were: (a) the titrimetric extraction with diphenylthiocarbazone,[1] and (b) the colorimetric method based on the use of diphenylthiocarbazone.[2]

The lead pipes in which water was placed for known periods of time were 1¼" inside diameter and of composition and treatment specified by the Department of Water Supply, Gas and Electricity of the City of New York. The pipes were cut to 5' lengths for convenience in handling, and were equipped with rubber stoppers and an escape vent to avoid trapped air in the test water. The capacity of each was 1,670 c.c. Before each pipe was used it was scrubbed with soap solution containing powdered pumice and thoroughly rinsed. Throughout the tests the pipes

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TABLE I

CHARACTER AND SOURCE OF WATER SAMPLES

Sample	Source	Hardness [2]	Alkalinity [2]	Domestic Pipe Line
A	I	21	10	Steel
B	I	21	10	Lead
C	[1] I & II (mixed)	Ave. 37	Ave. 16	Steel
D	[1] III & IV "	Ave. 302	Ave. 160	Brass
E	V	417	30.7	Steel
F	I	21	10	Lead

1. C is a mixture of soft waters of low alkalinity; D of hard waters of relatively high alkalinity.
2. Data reported by the Department of Water Supply, Gas and Electricity of the City of New York.

were kept filled with water and never permitted to dry during the removal of samples.

The sources of water samples collected in the City of New York are here identified as Catskill (I), Long Island (II), Flatbush well No. 16 (III), Flatbush well No. 20 (IV), and Flatbush well No. 30 (V). In order that each sample may be more specifically identified, the condition of the domestic pipe line is also recorded in Table I. Each sample is from an active pipe line and the specimen taken for treatment and analysis represents water that might have been drawn for drinking purposes.

Part of each sample of water was concentrated (2 liters to 500 c.c.) and analyzed for its lead content as received from the faucet at the source. Table II shows these results.

TABLE II

ANALYSIS OF WATER AS RECEIVED, EXPRESSED AS MG. OF LEAD PER LITER (AVERAGE OF FIVE OR MORE SAMPLES)

A	B	C	D	E	F
0.025	0.15	0.028	0.068	0.071	0.135

TABLE III

ANALYSIS OF WATER EXPOSED TO LEAD IN LEAD PIPES FOR DEFINITE PERIODS OF TIME

Sample	Pipe No.	Date Drawn	Days Exposed	Mg. Pb. per Liter
A	1	1- 4-36	7	1.050
A	1	1-11-36	7	1.346
A	2	1-11-36	7	2.220
A	1	1-28-36	7	1.317
A	2	1-28-36	7	1.465
A	1	1-25-36	14	2.160
A	2	1-25-36	14	2.247
B	1	11-12-35	11	0.656
B	1	12-10-35	18	0.901
B	2	12-10-35	18	0.953
C	1	11-11-35	7	1.412
C	2	12-28-35	7	1.315
D	1	12-10-35	7	1.100
D	2	12-10-35	7	0.903
E	1	12-17-35	8	1.293
E	2	12-17-35	8	1.369
A	3	1-18-36	7	3.378
A	4	1-18-36	7	3.670
A	3	1-25-36	14	4.420
A	4	1-25-36	14	4.722

Water from source F was not subjected to the lead pipe treatment because of inconvenience in securing samples.

The remainder of each sample was exposed to lead of lead pipes for a known period of time at room temperature and then removed for analysis. Table III displays these results. Each pipe was refilled immediately after the sample was removed. The samples are identified by the letters A to F as in Tables I and II and are reported as mg. lead per liter in the water exposed to lead in a 5′ pipe of 1.67 liters capacity.

With the exception of the last four observations, the pipes used had been exposed to water for at least 60 days before the observations reported in Table III were made. Water exposed to lead in new lead pipes dissolved comparatively great quantities of lead. A sample (A) withdrawn from a new pipe at the end of the first 20 days contained 73.75 mg. per liter. Another sample (A) withdrawn at the end of 38 days' exposure in a second new pipe contained 66.40 mg. lead per liter.

The last four observations in Table III were made with new pipes which had been exposed to three changes of water for 7 day periods each.

The U. S. Public Health Service states that lead in natural water "shall not exceed 0.1 p.p.m."[3] Samples B and F, Table II, exceeded that limit for the particular samples analyzed. Of particular interest is the fact that Waters A and B are from the same source (Catskill) but B came through an all lead domestic service pipe system, while A came through steel pipes. Table III indicates the conditions that might develop if the service pipes were not in active use for the periods indicated and 5′ or more of lead pipe constituted part of the pipe line. Continuous flow, agitation, and diffusion all tend to prevent the development of such situations. The observations reported here make it appear quite obvious that domestic service pipe lines made entirely or even in part, of lead should be thoroughly flushed after a period of rest before the water is used for drinking or for cooking of foods.

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Sixtieth Anniversary of American Chemical Society

CHARLES EDWARD MUNROE, eighty-seven years old, who all his life has worked among explosives, is the sole surviving charter member of the American Chemical Society, which at a national meeting in Pittsburgh, September 7–11, will celebrate the sixtieth anniversary of its founding.

The American Chemical Society, largest professional organization of its kind in the world, was organized in New York April 20, 1876. John W. Draper was the first president. Dr. Munroe was one of the original 183 members.

Three other members, J. B. F. Herreshoff, William H. Nichols, and H. E. Niese, maintained an unbroken connection with the American Chemical Society for more than fifty years.

Integrated Control of Occupational Diseases*

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SURELY no proof is needed for the establishment of the socio-economic importance of occupational diseases, at least for those who have been reliably informed of our recent experiences.

It is also axiomatic that control and prevention are far superior to cure, viewed from any of the aspects concerning occupational disease problems.

Others have covered the medical and engineering control of occupational diseases. What I shall attempt to do, therefore, will be to bring together and integrate these methods of control—mention some of the technical difficulties which have arisen, consider practical applications of methods in the different groups interested, speak briefly concerning the evolution of control, and, finally, attempt to come to some rational conclusions and recommendations.

CONTROL METHODS

In considering the *engineering control methods,* we are concerned, (A) with the basic principle of first investigating occupational conditions; (B) measuring the severity of the hazard scientifically, then assessing the hazard; and (C) instituting the indicated measures which have been evolved. These control methods include: (1) a physical and hygienic survey of plant conditions; (2) occupational history and analysis of employees; (3) adequate information concerning the materials and processes used: (4) atmospheric and gross sampling of materials, associated with quantitative physical and chemical determinations; (5) the rating of the hazard by comparing the findings in a given instance with accepted criteria; (6) an assessment of the efficiency of protective apparatus and devices; and (7) an adequate and proper interpretation of this information, so that it can be practically applied to the industrial problem involved.

If the above procedures give information which indicates the necessity of using various methods of protection, the following have been found useful in different combinations: (1) the use of mechanical devices, such as exhaust ventilating systems, respirators, masks, or helmets; (2) the changing of processes; (3) the substitution of nontoxic materials for those of proved toxicity; (4) educational programs; and (5) the continued maintenance and checking of the efficiency of protective equipment.

It is not claimed that the above list is exhaustive; there may be other measures of equal importance, but it is believed that the principal ones have been mentioned, and it is also known that they have been used successfully.

The *medical methods of control* are

* Read before the Industrial Hygiene Section of the American Public Health Association at the Sixty-fourth Annual Meeting in Milwaukee, Wis., October 9, 1935.

likewise well known, but will be mentioned briefly: (1)preëmployment physical examinations, with which is associated a thorough occupational history going back if possible for a period of 10 years; (2) periodic examinations of employees in so far as this is possible, but especially in instances where known hazards exist; (3) laboratory examinations, both in preëmployment and periodic examinations, to obtain evidence supplementary to physical examinations, and to determine whether the applicant or employee shows signs of the effects of occupational exposure; (4) educational programs, constantly acquainting employee and employer with the need for the use of medical control procedures; and finally (5) continuous and careful medical supervision, involving the principles of employee-placement and adjustment, as well as continued study of environmental conditions and the proper functioning of protective mechanisms.

It will be seen that the object of engineering measures, simply stated, is to estimate the severity and nature of the hazard presented and to recommend the use of methods in the industrial environment to control such hazard, while the object of medical procedures is to determine the nature and extent of the effects of the environment on the bodies of the exposed employees and, similarly, to recommend and institute measures for control and prevention.

TECHNICAL DIFFICULTIES

Although it will not be possible to discuss all the technical difficulties, emphasis will be placed upon the lack of proper coördination or integration of engineering and medical methods of control and the results thereof. It often happens, for instance, that the assessment of hazards in industrial environment is interpreted entirely separately from medical findings on employees in that environment. Contrariwise, it more frequently occurs that the medical data constitute the sole evidence upon which judgment is made as to the existence of potential occupational disease hazards.

The fallacy here is evident, because occupational disease is the direct result of exposure to deleterious conditions, materials, or processes found in an industrial environment. There is, therefore, a distinct cause-and-effect relationship, which cannot be efficiently used unless the interpretation of this cause-and-effect relationship is made by a thoroughly qualified person who understands the evaluation of an occupational disease hazard in terms of its effects upon the human body.

We cannot expect that the engineer will be able to do diagnostic work—nor should he be expected to understand the application of the fundamental principles of industrial toxicology—although in some instances he may be able to tell what will probably take place under certain conditions; likewise, in most instances, the industrial physician, who has had little training in or contact with the engineering principles of industrial hygiene, will not fully appreciate the importance of the environment as an etiological factor in the production of occupational diseases.

We thus have a condition in which the engineer is interested in his side of the work, chiefly the industrial environment, and the physician, largely with diagnostic problems. The result has been a lack of real coördination and integration of causal factors with physiological functions of exposed employees.

This lack of integration has been because of the scarcity of what we might call "qualified interpreters" who understand and appreciate the principles involved on both sides of this question and are able to make inter-

pretations in simple terms, so that this combined information may be issued to, and used by manufacturers, insurance companies, attorneys, and others to whom it is of vital concern.

The physician-industrial hygienist is probably the one specialized type of person who can adequately take the responsibility for this situation. Unfortunately, few of these have been developed, and in order to make usable the information gained by application of the methods of control of occupational diseases, we cannot depend entirely upon those few who have fortunately been able to secure training both in the fundamentals of medicine and industrial hygiene.

It is obvious that we cannot expect engineers to become physicians; it does seem reasonable, however, to expect the industrial physician to superimpose upon his medical background and experience at least an appreciation and working knowledge of the principles of industrial hygiene to the end that he may be in a position to integrate intelligently the etiologic and pathologic factors concerned in occupational diseases. Certainly, the majority of occupational disease problems which come up for final decision are medical in aspect, and it seems rational to say that the physician must, in the final analysis, take the responsibility for these decisions. Examples of the smooth functioning of such a principle are to be found in the work of the Office of Industrial Hygiene and Sanitation, U. S. Public Health Service, and the Bureau of Occupational Diseases, State Department of Health of Connecticut, where the technical and administrative policies of the group are under the guidance and control of an experienced medical officer.

As Glenn Frank has so well stated:

> The future of America is in the hands of two men—the investigator and the interpreter. We shall never lack for the administrator, the third man needed to complete this trinity of social servants. And we have an ample supply of investigators, but there is a shortage of readable and responsible interpreters, men who can effectively play mediator between specialist and layman. The practical value of every social invention or material discovery depends upon its being adequately interpreted to the masses. Science owes its effective ministry as much to the interpretative mind as to the creative mind. The knowledge of mankind is advanced by the investigator, but the investigator is not always the best interpreter of his discovery. Rarely, in fact, do the genius for exploration and the genius for exposition meet in the same mind. . . . The investigator advances knowledge. The interpreter advances progress. History affords abundant evidence that civilization has advanced in direct ratio to the efficiency with which the thought of the thinkers has been translated into the language of the workers.

It has seemed to me that the regular routine physical examination must undergo considerable adjustment before it can be properly applied to occupational disease potentialities, both in the routine examination before employment and during employment on hazardous jobs. The physician surely should have in mind those conditions and defects which may become aggravated by the specific exposure which the employee meets. The physical examination should always be interpreted in the light of the possible effects of industrial environment. In other words, the physician should take into account particularly the nature and severity of the hazard presented, in evaluating the defects or abnormal conditions found on physical examination. This would appear to be a more intelligent application of the industrial physical examination than has been widely and generally made.

To apply these principles successfully, the examining physician should be able to give an intelligent answer to the following questions: (1) Do you know the nature and severity of the

occupational hazard into which the examinee is going? (2) Are you satisfied that the examinee does not possess any abnormal conditions or defects which might be aggravated by occupational exposure? (3) Do you know the nature of the protective devices which are provided for the use of the employee and whether such devices are known to function properly?

Through intelligent interpretative comments in the answer to these questions, the physician can serve industry much more efficiently than he usually has done in the past.

PRACTICAL APPLICATION OF METHODS

In applying the principles of coordination and integration to the more efficient use of information regarding the control of occupational diseases, we are confronted with the problems of manufacturers, insurance companies, attorneys, and industrial commissions. We cannot entirely separate the problems of legal and compensation aspects from those of prevention and control, for we learn preventive methods largely through the so-called "trial-and-error" system. What we know about preventive medicine, for instance, was largely gained through repeated and collected experiences concerning disease manifestations and the ways in which they have been contracted. This principle applies no less to the prevention and control of occupational diseases, and it is necessary that preventive methods be developed through continuous observation and study of the avenues through which they develop; in other words, in our time at least, it will be impossible to divorce the study of the occurrence and effects of occupational diseases from that of their prevention, if advancement is to be accomplished.

It means practically nothing to the manufacturer to tell him that he has air in which there are 50 million dust particles per cu. ft.; that the free silica content of this dust amounts to 35 per cent; and that a particle-distribution study shows the majority of the particles to be below 3 μ in greatest diameter. Nor does it do him much good to find out that he has, in certain processes, a lead-in-air content of 10 mg. per 10 cu. m. of air, or a concentration of 1,500 p.p.m. of carbon monoxide. What the manufacturer wishes to know is the significance of these figures and what they mean in terms of possible disability among his employees. Someone must explain these things to him promptly and plainly.

Insurance company representatives, including engineers, claim men and underwriters, ask the same questions. The engineers want to know just what exposure would be safe. The underwriting group wants to know whether Plant A, as surveyed, is a good risk to put upon the books.

Attorneys and members of industrial commissions desire to know whether a given set of industrial conditions is an actual occupational disease hazard, whether the employee actually has the occupational disease in question, and whether such disease was contracted in the plant where the employee recently worked.

All of these are definite, practical problems regarding the etiology of occupational disease and its manifestations. If we can so assemble our information that we come to reliable conclusions and make these available, industrial medicine and hygiene will have performed a signal social and scientific service.

Clearly, the rational basis for intelligent underwriting and compensation for occupational diseases lies in obtaining over a period of many years, adequate and continued records of industrial exposure and its effects in producing disease and disability. This may

take considerable time, effort, and patience.

EVOLUTION OF CONTROL MEASURES

It is my belief that we are in an evolutionary period regarding occupational diseases. If we look back on our experience with fires, we find a prototype of this evolutionary process. In the beginning, there was no fire insurance and great losses were suffered. Eventually a system was provided by which one could insure against fire and the losses resulting. People discovered that in many cases it was not possible to recover the total loss suffered. After years of this experience, someone developed the idea that fire prevention was less costly than expecting to recover losses through insurance, although it was advisable both to carry coverage and prevent fires. Today we have developed many methods for the prevention of fire, as well as having improved in our ways of fighting fires. We can draw a similar analogy between the evolutionary processes of occupational diseases and those of accidental injuries. Time was (and probably still is, in some quarters) when those in authority believed that the effects of accidental injuries may be fully covered by insurance. This conception has gradually given way to the principle of accident prevention, which, while not fully developed, has gone a long way.

We shall probably have to learn the same lessons in occupational diseases that have previously been taught to us regarding fires and accidental injuries. Prevention is by far the most economical procedure, viewed from any angle.

CONCLUSIONS AND RECOMMENDATIONS

We may conclude that there is great need for more extensive use of the principle of integration in associating information and coming to more reliable conclusions regarding the causes and effects of occupational disease—such results to be applied in their prevention and control.

Such action would involve the training and employment of greater numbers of those whom we have been pleased to call "qualified interpreters," or, a combination of the following: (1) the use of consultants and advisers by manufacturers in working out their problems of occupational disease prevention and control; (2) adaptation of available personnel to the work of insurance companies, in respect to industrial investigations, claims problems, and the underwriting of future risks; (3) the development of more scientific medico legal principles in the handling of legal and compensation problems; (4) the further enlightenment and training of engineers, physicians, insurance company representatives, attorneys, industrialists, industrial commissions, and associates, through periodic conferences, meetings, and lectures.

If I have appeared to be presumptuous and have trod upon traditions and disturbed old trains of thought, we can take courage from the words of Henry Thomas Buckle:

> For the great enemy of knowledge is not error, but inertness. All that we want is discussion and then we are sure to do well no matter what our blunders may be. One error conflicts with another, each destroys its opponent, and truth is evolved. This is the course of the human mind, and it is from this point of view that the authors of new ideas, the proposers of new contrivances, and, the originators of new heresies, are the benefactors of their species. Whether they are right or wrong is the least part of the question. They tend to excite the mind; they open up new faculties; they stimulate us to fresh inquiry; they place old subjects under new aspects; they disturb the public sloth; and they interrupt rudely, but with most salutary effects, that love of routine which, by inducing men to go groveling on in the ways of their ancestors, stands in the path of every improvement, as a constant, and outlying, and too often, a fatal obstacle.

Detailed Study on Diphtheria Immunization*

With the One Dose Alum Precipitated Toxoid

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THIS study was made on 3 separate groups of school children, primarily of the first 3 grades, and was for the purpose of determining the efficacy and permanency of immunization against diphtheria by means of a single dose of 1 c.c. alum precipitated toxoid. It was conducted by individuals having had extensive experience in this work since the inception of active diphtheria control measures in Ohio. The toxoid used was from regular lots passed and approved by the National Institute of Health, Washington. Schick test control was not used, inasmuch as the Schick material was a non-peptone base, and 5 days elapsed between test and interpretation of reactions.

The discussion of Groups A and B in considerable detail has already been reported by Dr. Pansing.[1] The reader is referred to this publication for details pertaining to this study.

Group A—This group of 527 children was given the original Schick test September 13, 1933. On September 18, 1933, 468 were found to be Schick positive and were given 1 dose of 1 c.c. alum precipitated toxoid. On October 16, 1933, or 28 days after the toxoid was given, 462 of these children were retested with the following results: 388, or 84 per cent, were Schick negative, and 74, or 16 per cent, were Schick positive. Carrying through our original group the 74 who were Schick positive were retested for the third time at the end of 60 days to determine if there was any increase in the number rendered Schick negative after the 28 day period. This showed that only 7 children had changed from positive to negative Schick reaction at the end of 60 days.

Group B—This group of 570 children was entirely new, from different schools, and was given the original Schick test January 23, 1934. On January 29, 1934, 495 were found to be Schick positive and were given 1 dose of 1 c.c. alum precipitated toxoid. This second study was for the purpose of confirming the technic and results obtained on Group A. On April 4, 1934, or approximately 60 days after injection, 445 of those receiving treatment were retested, with the following results: 363, or 86 per cent, were found to be Schick negative, and 82, or 14 per cent, were Schick positive. It was found in some schools that as high as 96.5 per cent, and in others as low as 79 per cent, were rendered Schick negative on the 60th day after inoculation.

Group C—Those children who were

* September 13, 1933–December 4, 1936.

recorded as being Schick negative from both Groups A and B comprised the final group study, which represents only those children who were recognized to be positively Schick negative 2 years prior to the time of conducting the Group C study.

It is desired to emphasize the fact that Group C, on which the final study was made, consisted of children all of whom were Schick negative 28 or 60 days following 1 dose of 1 c.c. alum precipitated toxoid. It is shown in this final study that 57.8 per cent of a group of 549 Schick positive children who showed Schick negative 28 or 60 days following administration of 1 dose of 1 c.c. alum precipitated toxoid, reverted to Schick positive after 2 years. This surely is conclusive evidence that the early protection effected by a single dose of 1 c.c. alum precipitated toxoid is not of sufficient permanency to justify the continued use of a single dose as the method of choice in diphtheria control.

Attention is directed to information gained from this study, which indicates that a somewhat more permanent protection is secured in those children receiving the second dose of 1 c.c. alum precipitated toxoid. It will be noted that this group showed that 60 per cent retained immunity compared with 42.2 per cent retained by the group having only 1 dose. However, this small group consisted of children who were never Schick negative, as far as this study is concerned, and may include children who are recognized to be resistant to any antigen.

TABULATION OF GROUP C

This comprises a final group of 549 children who were initially Schick positive, given 1 dose of 1 c.c. alum precipitated toxoid, retested on the 28th or 60th day and found to be Schick negative, and retested 2 years later December 4–6, 1935.

The group receiving the second dose of 1 c.c. alum precipitated toxoid 60 days after the first dose is quite small. However, it confirms the theory that

TABLE I

School	*Total Group Available from Original Study*	*No. Neg. 1933*	*No. Retested Dec., 1935 Results*		*No. Receiving 2nd Dose A.P. Toxoid, 1933 and Results of Retest, Dec. 4–6, 1935*		
			Neg.	*Pos.*	*No.*	*Neg.*	*Pos.*
A	23	16	8	8	7	4	3
B	27	25	5	20	2	1	1
C	45	36	4	32	9	3	6
D	50	44	16	28	6	3	3
E	32	23	13	10	9	9	0
F	16	14	4	10	2	2	0
G	45	37	15	22	8	6	2
H	49	40	4	36	9	2	7
I	32	30	9	21	2	0	2
J	16	10	3	7	6	1	5
K	41	35	18	17	6	3	3
L	65	63	32	31	2	2	0
M	47	43	22	21	4	3	1
N	30	28	20	8	2	1	1
O	136	105	59	46	31	22	9
Total	654	549	232	317	105	62	43
Percentage			42.2	57.8		60	40

secondary stimulus is required to produce sufficient antitoxin in the blood stream to effect more lasting immunity. If this be true, as we believe, multiple doses of alum precipitate or unmodified toxoid are indicated. This study was undertaken primarily for the purpose of determining the degree and permanency of the immunity from a single dose of alum precipitated toxoid. Our findings confirm in this respect the report of Fraser and Halpern, University of Toronto, Canada,[2] who show by blood serum titrations in a group of children, that the antitoxin response "to 3 doses of unmodified toxoid is distinctly better than the response to 1 dose of alum precipitated toxoid." These titrations were made before injection and 10 weeks, and 1 year after injection, with the following results:

	Units Antitoxin 10 Weeks	*Units Antitoxin 1 Year*
1 dose A. P. toxoid	62% more than 1/100	19% more than 1/100
	30% more that 1/50	11% more than 1/50
3 doses plain toxoid	91% more than 1/100	91% more than 1/100
	91% more than 1/50	69% more than 1/50

SUMMARY AND CONCLUSIONS

1. Analysis of the data from the initial study of Groups A and B indicates early and high immunity from 1 dose of 1 c.c. alum precipitated toxoid on the 28th and 60th day after inoculation, as determined by Schick test.

2. Analysis of the data of Group C comprising a group of 549 children who were Schick negative 60 days after administration of 1 dose of alum precipitated toxoid, indicates that 57.8 per cent have lost this protection at the end of 2 years.

3. The group of children receiving a second dose of alum precipitated toxoid indicates somewhat higher percentage of immunity at the end of the 2 years. It is recognized that this group was extremely small. However, 60 per cent were Schick negative compared with 42.2 per cent for the group receiving a single dose.

4. The benefit derived from secondary stimulus by means of multiple injections of antigen is indicated.

5. These data confirm the belief that efforts to simplify the technic to a single dose antigen led to the sacrifice of reasonable permanency of immunity for greater convenience of administration.

6. From this study we hope to stimulate further laboratory and clinical research in order to determine on a plan of more permanent protection against diphtheria.

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2. Fraser, D. T., and Halpern, K. C. Diphtheria Toxoid—A Comparison of One Dose of Alum Precipitated with Three Doses of Unmodified Toxoid. *Canad. Pub. Health J.*, XXVI, 10 (Oct.), 1935.

Government Lands

AT a recent meeting of the American Title Association, Memphis, it was reported that the government now owns more than 400,000,000 acres of land. In the last fiscal year public domain increased 2,850,000 acres. For the present fiscal year acquisition of more than 10,000,000 acres is planned.

Response to Rabies Vaccine Prophylaxis as Shown by Protection Tests*

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TWO years ago we reported on Rabies Vaccine Protection Tests [1] and detailed the intralingual method of the injection of the infective dose of rabies virus into rabbits and the advantages of the method and test.

We have continued with the test on rabbits on the basis that rabies vaccine prophylaxis should actually protect the animal against an infective dose of rabies virus, which in the amount of 0.1 c.c. of a 5 per cent fresh brain tissue emulsion from a rabbit dead of fixed rabies virus, injected intralingually or directly into the tongue, should prove fatal for at least two-thirds of the control rabbits. Such injections usually result in a fatal infection in more than two-thirds of the control rabbits and not infrequently in all of the controls with a period of incubation and death in 8 to 9 days as against 6 to 7 days when the same dose of fixed rabies virus is injected intracranially.

The group 1 rabbits died in 9 days, and all of the group 5 rabbits survived the initial infective dose. The death of 1 rabbit of the 6 in group 4 not only indicates the infectivity of the 0.0001 c.c. dose, but also the effect on the period of incubation and death, which in this instance was lengthened to 16 days. The 0.01 c.c. dose proved infective for 5 of the 6 group 2 rabbits, and 2 of these showed a lengthening of the period of incubation and death to 10 days. Group 3 rabbits with the 0.001 c.c. infective dose showed an increased period of incubation and death of 10–14 days in the 4 of the 6 rabbits in which the dose proved fatal.

The rabbits that survived the original infective dose were held for 24 days and then injected intralingually with a 0.1 c.c. dose of a 5 per cent brain tissue suspension of fixed rabies virus, identical with the dose originally employed on the group 1 rabbits of which there were no survivals. The second infective dose injections had no apparent effect on the 1 surviving rabbit of group 2, and the 2 rabbits of group 3, which may indicate natural resistance to all of the injections of these rabbits or increased resistance from the first injection which enabled these rabbits to withstand the second infective dose. The group 4 rabbits are of special interest in that at least sufficient rabies virus was included in the 0.0001 c.c. dose to infect 1 of the 6. The remaining 5 rabbits on the second infective dose showed natural susceptibility in 3, with death in 8 to 9 days, while 2 survived. The second infective dose on the group 5 rabbits killed 5, or over two-thirds, which is the usual occurrence in control groups of rabbits. The results

* Read before the Laboratory Section of the American Public Health Association at the Sixty-fourth Annual Meeting in Milwaukee, Wis., October 8, 1935.

TABLE I

SHOWING THE RELATIONSHIP OF THE SIZE OF THE INFECTIVE DOSE, INJECTED INTRALINGUALLY TO THE PERIOD OF INCUBATION AND DEATH

Group	Rabbits	Infective Dose 12–17–34	Brain Tissue 5% Suspension	Results†	Interval	Infective Dose 5% Brain Tissue 1–17–35	Rabbits	Results†
1	6	0.1 c.c. Intralingually	0.1c.c.	6—Dead— 9 days—100%	24 days	0.1 c.c. Intralingually	..	.....
2	6		0.01*	2—Dead— 8 days 1—Dead— 9 days— 84% 2—Dead—10 days	24 days		1	Living—100%
3	6		0.001*	2—Dead—10 days 1—Dead—13 days— 66% 1—Dead—14 days	24 days		2	Living—100%
4	6		0.0001*	1—Dead—16 days— 16%	24 days		5	2—Dead—8 days 1—Dead—9 days—60%
5	6		0.00001*	Living—100%	.....		6	4—Dead— 8 days 1—Dead—11 days—83%

* Represents dilution of the original 5% suspension to permit injection of 0.1 c.c. doses
† Deaths preceded by definite symptoms of rabies

TABLE II

RABIES VACCINE PROTECTION TESTS ON RABBITS

Group	Rabbits	Rabies Vaccine Phenol Killed*	Infective Dose† Interval	Results‡	Control Rabbits†	Results‡	Control Rabbits§	Results‡
1	2	0.5 c.c. 7 days	1 day	Living 50%	3	Dead 100%	3	Dead 100%
2	3	0.5 c.c. 7 days	3 days	Living 100%	3	Dead 100%	3	Dead 100%
3	3	0.5 c.c. 7 days	5 days	Living 66%	3	Dead 66%	3	Dead 100%
4	3	0.5 c.c. 7 days	7 days	Living 66%	3	Dead 66%	3	Dead 100%
5	3	0.5 c.c. 7 days	10 days	Living 100%	3	Dead 33%	3	Dead 100%
6	3	0.5 c.c. 7 days	14 days	Living 100%	3	Dead 66%	3	Dead 66%
7	3	0.5 c.c. 7 days	21 days	Living 100%	3	Dead 100%	3	Dead 100%

* 25% Brain tissue emulsion rabies vaccine daily subcutaneous injections
† 0.5% Brain tissue emulsion rabies virus, 0.1 c.c. injected intralingually
‡ Deaths preceded by definite symptoms of rabies
§ 0.5% Brain tissue emulsion rabies virus, 0.1 c.c. injected intracranially

TABLE III

RABIES VACCINE PROTECTION TESTS ON RABBITS

Group	Rabbits	Normal Rabbit Brain and Cord Tissue*	Infective Dose† Interval	Results‡	Control Rabbits†	Results‡	Control Rabbits§	Results‡
1	2	0.5 c.c. 7 days	1 day	Dead 100%	3	Dead 100%	3	Dead 100%
2	3	0.5 c.c. 7 days	3 days	Dead 66%	3	Dead 100%	3	Dead 100%
3	3	0.5 c.c. 7 days	5 days	Dead 66%	3	Dead 66%	3	Dead 100%
4	3	0.5 c.c. 7 days	7 days	Dead 100%	3	Dead 66%	3	Dead 100%
5	3	0.5 c.c. 7 days	10 days	Dead 66%	3	Dead 33%	3	Dead 100%
6	3	0.5 c.c. 7 days	14 days	Dead 100%	3	Dead 66%	3	Dead 66%
7	3	0.5 c.c. 7 days	21 days	Dead 100%	3	Dead 100%	3	Dead 100%

* 25% Normal rabbit brain and cord tissue phenolized emulsion, daily subcutaneous injections
† 0.5% Brain tissue emulsion rabies virus, 0.1 c.c. injected intralingually
‡ Deaths preceded by definite symptoms of rabies
§ 0.5% Brain tissue emulsion rabies virus, 0.1 c.c. injected intracranially

of the Table I data support the deduction that the simultaneous use of dilutions of fixed rabies virus, injected intralingually is accompanied by a lengthening of the period of incubation.

The groups 1 to 7 rabbits all received the same rabies vaccine phenol killed in 0.5 c.c. daily doses for 7 days, injected subcutaneously. The infective dose for each group was injected intralingually with a time interval of 1 day for group 1 to 21 days for group 7. The results indicate that as short an interval as 3 days is followed by an increased resistance. Of the 20 rabbits injected with daily 0.5 c.c. doses of rabies vaccine phenol killed, 17 survived the infective dose, and 3 died irrespective of the different intervals, while of the 21 control rabbits injected intralingually with the infective dose only 5 survived and 16 died, and of the 21 control rabbits injected intracranially with the infective dose 1 survived and 20 died.

Groups 1 to 7 rabbits were injected subcutaneously with 25 per cent *normal* rabbit brain and cord tissue phenolized emulsion in 0.5 c.c. daily doses, so that the results could be compared with the results of the protection tests of Table II. Of the 20 rabbits included in groups 1 to 7 in Table III, only 3 survived, and 17 died following the intralingual injection of the infective dose, showing that *normal* rabbit brain and cord tissue emulsion did not increase the resistance of the rabbits, and that the rabbits were as susceptible as the control rabbits, of which 21 injected intralingually 5 survived and 16 died, while of the 21 control rabbits injected intracranially 1 survived and 20 died.

Groups 1 to 10 rabbits were injected subcutaneously with 0.5 c.c. doses of rabies vaccine phenol killed and group 1 to 7 injected intralingually with the infective dose without an interval between the last dose of vaccine and infective dose. None of the rabbits developed an increased resistance. Groups 8, 9 and 10 injected with 7 daily doses of vaccine followed by an interval of 1, 2 and 3 days, had an increased resistance to the infective dose. Of the 30 control rabbits injected intralingually with the infective

TABLE IV

RABIES VACCINE PROTECTION TESTS ON RABBITS

Group	Rabbits	Rabies Vaccine Phenol Killed*	Infective Dose† Interval	Results‡	Control Rabbits†	Results‡	Control Rabbits§	Results‡
1	3	0.5 c.c. 1 day	.....	Dead 66%	3	Dead 100%	3	Dead 100%
2	3	0.5 c.c. 2 days	.....	Dead 66%	3	Dead 100%	3	Dead 66%
3	3	0.5 c.c. 3 days	.....	Dead 100%	3	Dead 66%	3	Dead 100%
4	3	0.5 c.c. 4 days	.....	Dead 66%	3	Dead 100%	3	Dead 66%
5	3	0.5 c.c. 5 days	.....	Dead 66%	3	Dead 66%	3	Dead 100%
6	3	0.5 c.c. 6 days	.....	Dead 100%	3	Dead 100%	3	Dead 100%
7	3	0.5 c.c. 7 days	.....	Dead 66%	3	Dead 66%	3	Dead 100%
8	3	0.5 c.c. 7 days	1 day	Living 66%	3	Dead 66%	3	Dead 100%
9	3	0.5 c.c. 7 days	2 days	Living 100%	3	Dead 66%	3	Dead 100%
10	3	0.5 c.c. 7 days	3 days	Living 100%	3	Dead 66%	3	Dead 100%

* 25% Brain tissue emulsion rabies vaccine, daily subcutaneous injections
† 0.5% Brain tissue emulsion rabies virus, 0.1 c.c. injected intralingually
‡ Deaths preceded by definite symptoms of rabies
§ 0.5% Brain tissue emulsion rabies virus, 0.1 c.c. injected intracranially

TABLE V

RABIES VACCINE PROTECTION TEST ON RABBITS

Group	Rabbits	Rabies Vaccine Phenol Killed *	Infective Dose † Interval	Results ‡
1	3	1.25 c.c.	14 days	Dead 66%
2	3	2.5 c.c.	"	Dead 100%
3	3	3.75 c.c.	"	Living 66%
4	3	5.0 c.c.	"	Living 100%
5	3	6.25 c.c.	"	Living 66%
6	3	Intralingual Controls		Dead 66%
7	3	Intracranial Controls		Dead 100%

* 20% Brain tissue emulsion rabies vaccine (horse), subcutaneously injected
† 0.5% Brain tissue emulsion rabies virus, 0.1 c.c. injected intralingually
‡ Deaths preceded by definite symptoms of rabies

dose of fixed rabies virus, 6 survived and 24 died, and of the 30 control rabbits injected intracranially 2 survived and 28 died.

Groups 1 to 5 rabbits were injected subcutaneously with a single dose of rabies vaccine, phenol killed, and after an interval of 14 days each rabbit was injected intralingually with the infective dose.

Inasmuch as 2 of the 3 group 1 rabbits injected with 1.25 c.c. single dose of vaccine died and all 3 of the group 2 rabbits injected with 2.5 c.c. single dose of vaccine died, the doses of vaccine injected failed to increase the resistance of the rabbits to the infective dose. The single doses of vaccine injected into groups 3, 4, and 5 rabbits apparently increased the resistance of these rabbits to the infective dose. The death of 1 rabbit in groups 3 and 5 suggests that the 3.75 c.c. dose of group 3 and the 6.25 c.c. dose of group 5 were less efficient than the 5 c.c. dose of group 4.

The data in Table V show that sufficient vaccine must be included in the single dose to show increased resistance to the infective dose after a 14 day interval. There is also some indication that there are limits to the proper dose and that too much vaccine may not increase the resistance of rabbits to the infective dose after a 14 day interval any more than too little vaccine in the single dose.

CONCLUSIONS

Fresh fixed rabies virus in the form of a 5 per cent brain tissue suspension in 0.1 c.c. doses injected intralingually can be relied upon as an infective dose, and to produce rabies in rabbits with an incubation period and death in from 8 to 9 days. It has been shown that dilutions of the virus so injected, are accompanied by an increase in the period of incubation, and that it is possible to inject a dilution which is capable of infecting only a small percentage of the rabbits, and the rabbits that do develop rabies in the higher dilutions will have a lengthened period of incubation.

In the protection tests described, phenol killed rabies vaccine was administered under various dosage schemes and intervals before the injection of the infective dose. These tests show that it is possible to increase the resistance of rabbits injected with rabies vaccine phenol killed, and then exposed to the infective dose, while rabbits prophylactically treated with normal rabbit brain tissue emulsion show no increased resistance to the infective dose of fixed rabies virus.

It seems necessary to employ the proper amount of rabies vaccine in the single dose prophylactic treatment to increase the resistance of rabbits to an infective dose after a 14 day interval.

REFERENCE

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Incidence and Behavior of Non-Lactose Fermenting Bacteria from Normal Stools

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IN 1934 the author [1] described a number of strains of Gram-negative, non-lactose fermenting bacteria isolated from the stools of 25 out of a group of 127 healthy food handlers, during a routine search for intestinal pathogens. Six additional groups, totaling 384 food handlers, have now been examined, and similar bacteria, resembling the Salmonella but failing in one respect or another to fit in that group, have been isolated from 84 stools. This paper presents data on the incidence of these organisms, evidence through lactose fermentation of their relationship to the colon group, a description of the dissociation of colon strains into non-lactose fermenting variants, and a report of the quantitative utilization of lactose by the non-lactose fermenting bacteria.

The procedure followed in isolating the cultures has already been described [1]: first platings from stools on eosin-methylene-blue agar and transfer of colorless colonies to Russell's double sugar agar slants. All cultures were tested for fermentation of carbohydrates, the production of indol, the Voges-Proskauer and methyl-red reactions, the utilization of citrate as sole source of carbon, the liquefaction of gelatin, and agglutination in specific diagnostic sera.

INCIDENCE

Table I lists the number of food handlers examined in each group and the number of non-lactose fermenting strains isolated. Two facts are evident from this table: (1) Non-lactose fermenting bacteria were encountered

TABLE I

INCIDENCE OF NON-LACTOSE FERMENTING BACTERIA IN NORMAL STOOLS

Group	*Year Isolated*	*No. Persons Examined*	*No. Non-lactose Fermenting Strains*	*Per Cent Persons Harboring Non-lactose Fermenters*	*Month Isolated*
					Early
A-2	1933	120	33	27.5	Oct.
B	1934	40	12	30	Oct.
A-3	1934	47	11	23	Nov.
A-1	1932	127	25	19.6	Nov.
			Previously reported		
C	1934	41	9	22	Dec.
A-4	1935	67	9	13.5	Dec.
D	1936	69	10	14.5	Jan.

every year and in each group of food handlers, although no carriers of intestinal pathogens were found. (2) The incidence of these strains generally decreases through the winter months, the incidence being highest in October and decreasing through December and January. This fact was demonstrated indirectly in an earlier report [1] which described the examination of 21 food handlers whose stools all had contained these organisms in November; when recultured in March only 3 stools contained them. The data suggest a seasonal variation with highest incidence in the late summer months. The institutions employing these food handlers are closed during the summer and an examination of the subjects is impossible until fall.

There was also a variation in individuals from year to year, shown when the stools of 102 food handlers (in Groups A-1 and A-2, Table I) were cultured in 2 successive years. It was found that these bacteria were neither constantly present nor culturally identical in any individual. The stools of 19 subjects contained these bacteria in 1933, though they had been negative the year before; the stools of 13 were negative in 1933 though they had been positive the year before; the stools of only 8 contained these organisms both years, and they were not biologically identical. Eighty stools were negative both years.

In a study of Lactose Degraded Colon-Aerogenes Organisms in Normal Feces, Parr [2] found that such organisms were rare in fresh feces, but increased to about 17 per cent in stored feces. He later demonstrated [3] that this increase was caused by a change in ordinarily normal colon organisms. Confirmation of the fact that such changes can occur in colon bacteria will be given later, but aging or storage of the specimens does not account for the high percentage of the strains described here. Great care was taken in timing the collection of specimen tubes so that the stools could be plated within a very short time after passage. No specimens were shipped nor were preservatives used.

LACTOSE FERMENTATION

Following the method outlined in an earlier paper,[1] all the original non-lactose fermenting cultures were incubated in 5 per cent lactose-peptone-water with Andrade indicator, for 2 weeks. Those cultures which produced any fermentation were transferred to 1 per cent lactose, in series, until fermentation occurred daily. These cultures were then plated on eosin-methylene-blue agar, and their ability to use lactose in a solid medium was noted. Table II, using the same groups as Table I, shows that an average of 55 per cent of the originally non-lactose fermenting strains finally fermented lactose, and that an average of 56 per cent of these acquired a completely colon type of reaction on eosin-methylene-blue agar. Once acquired, the ability to ferment lactose has been permanent. The cultures really fall into two groups, the "slow lactose fermenters," which give a delayed reaction and half of which assume all the characters of true colon bacteria,* and the true "non-lactose fermenters," which never ferment this sugar. The colonies of the slow lactose fermenters, in pure culture on eosin-methylene-blue agar, are large, opaque, and faintly colored, in contrast to the colonies of the non-lactose fermenters which are small, gray and transparent.

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* The term "true colon bacteria" is used here in a broad sense to include aerobic, Gram-negative, nonspore forming bacilli, fermenting lactose with acid and gas in the standard liquid and solid differential media, and producing the characteristic color and metallic sheen on eosin-methylene-blue agar.

TABLE II

LACTOSE FERMENTATION

Group	Total No. of Strains	No. Finally Fermenting 5 Per Cent Lactose	Typical Coli on E.M.B. Agar
A-1	25	17	12
		Previously reported	
A-2	33	14	5
A-3	11	9	4
B	12	7	3
C	9	4	4
A-4	9	5	3
D	10	4	3

DISSOCIATION OF COLON CULTURES INTO NON-LACTOSE FERMENTERS

A striking example of the loss of power to attack lactose was furnished by a number of strains of *Escherichia coli*. A large group of strains (120) of true colon bacteria * had been isolated from the stools of the food handlers in Group A-2, and were stored on extract slants. Several months after isolation, these cultures were again plated on eosin-methylene-blue agar. Colorless colonies were observed in 19 of the cultures. Although the colon cultures were purified twice, the non-lactose fermenting colonies invariably appeared after the cultures had aged 2 or more weeks on the slants. Single cell isolations of 13 of the dissociating cultures were then made by fishing from dilute suspensions on agar with the aid of a micromanipulator. These single cell cultures had true colon reactions when first isolated, but non-lactose fermenting colonies appeared in all of them when they had aged on the slants for a few weeks. Except for the reaction to lactose, all the variants were identical with the parent strains. When grown in 5 per cent lactose, one of the variants fermented it weakly, but the rest were true non-lactose fermenters, and this character has been permanent. Since the variants arose unquestionably from unmixed colon strains, strong support is furnished for the view that such strains appearing in normal stools can also be variants of true colon bacteria.

An attempt was made to produce this change in colon bacteria by a controlled experiment. Fifteen colon cultures were grown for 4 months at room temperature in 3 different media: a saline suspension of sterile feces, 10 per cent ox bile, and extract broth. No variants appeared in any of the cultures. It is evident that neither feces nor pure bile had a retarding influence, in the test tube at least, on the ability of these cultures to ferment lactose. Five of the strains were originally slow lactose fermenters, which had acquired a completely colon type of reaction. The remainder of the cultures were 3 Aerobacter, 1 Citrobacter, and 6 Escherichia.

The effect of a strong colon bacteriophage,* acting for several weeks on a group of colon strains, was also studied. Rough colonies appeared among the resistant forms which grew out after lysis, but no change was observed in regard to lactose fermentation. The fact that colon variants may show colony differences but no alteration in the fermentation of sugars has also been observed by Bergstrand,[4] Lewis,[5] Gratia,[6, 7] and others. In a control group of cultures which were not attacked by this phage, a few strains produced non-lactose fermenting colonies after several weeks. However, these appeared also in the broth tubes containing no phage, and are therefore clearly not the result of bacteriophage action, but are simply another example

* The term "true colon bacteria" is used here in a broad sense to include aerobic, Gram-negative, nonspore forming bacilli, fermenting lactose with acid and gas in the standard liquid and solid differential media, and producing the characteristic color and metallic sheen on eosin-methylene-blue agar.

* I am indebted to Dr. Roy Feemster for the use of all the bacteriophages employed in the tests described here.

of the susceptibility of certain cultures to the effects of aging.

The dissociation of these colon strains into non-lactose fermenting bacteria has remained an unexplained phenomenon, and no light has been thrown on the nature of the change by our attempts to produce similar effects through the action of feces, bile, or bacteriophage. Parr [3] observed that this type of change is more easily effected by these methods in the Aerobacter group than in the Escherichia group. All the variants reported here however, arose from the Escherichia type.

UTILIZATION OF LACTOSE

Jones, Orcutt, and Little [8] have described a group of non-lactose fermenting bacteria which they isolated from the feces of cows with infectious diarrhea. Continuous incubation in lactose broth resulted in fermentation in varying periods of time. When they determined quantitatively the amount of lactose consumed by 5 of these cultures, they found that the sugar was utilized from the beginning in as large amounts as colon strains used, but that the pH was high and this alkalinity was masking the fermentation for some days.

To see if a similar condition was true of the organisms reported here, a group of slow lactose fermenters and non-lactose fermenters was selected and grown in 1 per cent lactose-peptone-water. Neither salt nor indicator was added, and the medium was sterilized by filtration through a Berkfeld N filter to avoid any hydrolysis of the sugar in autoclaving. The lactose consumed was determined by the method adapted for bacterial cultures by Stiles, Peterson, and Fred [9] from Shaffer and Hartmann's [10] volumetric method. Analyses were made after 2 and 6 days' growth at 38° C., that is, before and after fermentation was expected. Before each analysis, Andrade indicator was added to a portion of the culture to demonstrate the usual acid reaction, if present. The exact pH was also determined colorimetrically. Considerable difficulty was experienced with the method, and the error was large; averages of the results were nevertheless consistent. Ten strains of slow lactose fermenters consumed as much lactose as 4 colon strains (0.3–0.6 mg.), but not until the customary acid production was evident with Andrade indicator, and not until the pH had fallen to 5.0 or lower. Seven strains of non-lactose fermenters and 2 strains of *Salmonella paratyphosus* B consumed no lactose, or very small amounts which could be attributed to error in analysis (—0.052 to +0.053 mg.). They also showed no change in pH and remained colorless when Andrade indicator was added. In short, the result of these determinations showed that the utilization of lactose by these cultures was accurately shown by the usual fermentation tests.

CLASSIFICATION

The cultures described here consisted of morphologically short, Gram-negative bacteria, almost coccoid in form in contrast to the longer bacillary form of the usual colon bacteria. They all produced gas in the carbohydrates fermented. All fermented some sugars in addition to dextrose, so were not Morgan's bacillus. None liquefied gelatin in 2 weeks' growth. None of the colonies developed lactose fermenting papillae in several days' growth on plates; so they could not be considered as *B. coli mutabile,* described by Neisser [11] and recently by Dulaney and Michelson.[12]

Attempts to classify these non-lactose fermenting and slow lactose fermenting strains by agglutination in specific diagnostic sera were futile. Antisera (Mul-

ford's) for 2 Escherichia types, 4 Salmonella, 3 Dysenteriae and *E. typhosus* were used diluted and undiluted against suspensions of all the organisms. Over 65 per cent of the strains were entirely negative, and the positive ones agglutinated nonspecifically in the entire range of sera, and in low dilutions only. A group of 15 strains of colon bacteria reacted in exactly the same way.

Further attempts to classify these strains by the action upon them of a large number of coli, dysentery, and typhoid bacteriophages also failed. Very few of the strains were susceptible to lysis. Those which were attacked by the phages were not affected specifically.

The cultural reactions of these bacteria, however, place them surely in the colon group. The 60 strains of slow lactose fermenters may thus be considered as colon bacteria. Of the 49 strains of non-lactose fermenters, 26 fermented sucrose, or formed indol or did both, and may also be grouped with the colon bacteria, on this basis. The remaining 23 strains of non-lactose fermenting bacteria did not form indol or ferment sucrose, but may also be classed with the colon group for this reason: 8 strains of indol negative sucrose negative *Escherichia coli* were isolated, and 2 of these strains produced non-lactose fermenting variants identical with them except for the lactose reaction, as already described. Therefore it is obvious that cultures identical with the Salmonella in all respects except agglutination, can arise from true colon strains.

If then these cultures are all regarded as members of the colon group, it is possible to classify them in established groupings by the Voges-Proskauer and methyl-red reactions, indol production and citrate utilization. Following the groupings of Werkman and Gillen,[13] Levine,[14] and Kline,[15] these 109 cultures can be grouped as 74 strains of Escherichia, 14 strains of Citrobacter, and 21 strains of Aerobacter. Eleven of these were the "intermediate" types described by Kline,[15] Tittsler and Sandholzer,[16] Koser,[17] and others. That is, they varied from the type in the Voges-Proskauer or methyl-red reaction, or in indol production or utilization of citrate. All the strains in the Escherichia group could be classified on the basis of sucrose and salicin fermentation by the simplified method of Levine[14] into the 4 common varieties.

CONCLUSION

Although the organisms reported here were isolated from healthy people, it must be remembered that most of this type of organism described in the literature have been isolated from cases of diarrhea, sometimes in epidemic form. The accumulation of evidence showing the presence of these bacteria during intestinal derangements cannot be disregarded simply by classifying them in the colon group. It is significant that the fermentation of lactose, which has provided the chief routine distinction between the pathogenic and non-pathogenic intestinal forms, should be the reaction most subject to fluctuation. The frequency with which these lactose aberrant colon bacteria are encountered in intestinal disturbances suggests that the loss of power to ferment lactose may be related to a possible transition state between the non-pathogenic colon group and the pathogenic Salmonella.

SUMMARY

1. Non-lactose fermenting bacteria have been isolated from stools of 109 healthy people in routine stool examinations of 511 food handlers of several schools.

2. These strains were encountered in each group examined.

3. A seasonal variation was observed, with highest incidence near the summer months, and decreasing through the winter.

4. Repeated examinations showed that these organisms were not constantly present in any individual, nor did constant types occur in one person.

5. Over half of the organisms were finally able to ferment lactose, and over half of these acquired a completely colon type of fermentation on solid media.

6. Dissociation of 19 strains of *Escherichia coli*, 13 strains of which were single cell cultures, into permanently non-lactose fermenting variants, is described.

7. Neither the action of a strong coli bacteriophage, nor growth in sterile feces and in 10 per cent bile, produced non-lactose fermenting colonies in colon strains.

8. Quantitative determinations of the amount of lactose consumed by a group of these cultures showed that lactose was not utilized until acid production was apparent by the usual tests.

9. Classification of the cultures by agglutination in diagnostic sera, and by the action of bacteriophage, was impossible.

10. However, classification by cultural reactions was possible, and all the strains were shown to belong to one type or another in the colon group.

11. Although it is a simple matter to classify these organisms in the colon group by careful attention to all the aspects of lactose fermentation, it is suggested that the frequent reports of their presence in intestinal disturbances may indicate a transition state between the non-pathogenic and the pathogenic types.

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Improvised Clinic

WITH the nearest hospital 30 miles away, the little community on Grand Isle in Lake Champlain needed a medical center desperately. So Dr. and Mrs. Frank Hall decided in 1933 to convert an unoccupied house into a clinic.

Substituting energy for capital, they rescued old "double-deckers" which a nearby camp was discarding and converted them into hospital beds. They contrived bedding from anything that could be sewn together and made pillows from discarded pieces of oilcloth. The operating table was built by the local carpenter for one dollar. Out of the kitchen came Mrs. Hall's roaster, promoted to the rank of sterilizer. The community helped. Local women became nurses; others made bandages.

Patients pay for services according to their means, sometimes in cash (as little as 50 cents for an operation), sometimes in produce. One man is paying for his baby in perch at 15 cents a dozen.—*Readers Digest*, February, 1936, p. 109.

Incidence and Significance of Beta Hemolytic Streptococci in Cultures from a Selected Group of Milk Handlers*

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THE subject of laboratory examinations of milk handlers as an integral part of a program for the control of milk-borne disease has been reviewed by West, Borman, and Mickle [1] and Borman, West and Mickle.[2] In the publication of the former the results of experience in Connecticut with a state-wide program of this type were discussed. This paper prompted the formulation of a questionnaire regarding the value of the Connecticut program and of all such examinations in general, which was submitted to persons considered qualified to express authoritative opinions. The replies to this questionnaire formed the basis for a general discussion of the subject presented in the latter paper. One point in particular was so obviously controversial that no satsifactory conclusion could be drawn from the many opinions expressed; *i.e.*, the value of examinations of throat and nose cultures for beta hemolytic streptococci.

Prompted by the paramount importance of streptococcus infections in the history of milk-borne disease, Borman, West, and Mickle [2] made the following recommendation in formulating a rational milk-handler control program:

> Examinations of throat and nose cultures for beta hemolytic streptococci should be incorporated as soon as reliable and practicable methods for determining the virulence or invasive power of any given strain are developed. In the absence of a satisfactory criterion it may be desirable in some areas to regard any milk handler as dangerous when he is harboring large numbers of typical beta hemolytic streptococci.

The necessity for examining this recommendation in the light of a controlled experiment to determine its feasibility was apparent. The study now to be presented and discussed was designed to throw light on the following points: (1) the efficiency of routine methods, practicable in a centrally located public health laboratory, for detecting the presence of beta hemolytic streptococci in throat and nose cultures; (2) the incidence of positive cultures in a representative group of milk handlers under normal conditions; (3) the extent of association of positive cultures with significant clinical find-

* Based in part on a dissertation submitted by the senior author, while a Commonwealth Fund Fellow, to the Faculty of Yale University in partial fulfillment of the requirements for the degree of Doctor of Public Health. Read before the Laboratory Section of the American Public Health Association at the Sixty-fourth Annual Meeting in Milwaukee, Wis., October 7, 1935.

ings; (4) the characteristics and probable significance of the strains isolated.

PLAN OF THE STUDY

Permission was secured from the managers of 5 dairies to take weekly throat and nose cultures of their 85 employees. The dairies were selected to include distributors both of raw and of pasteurized milk. Although it was realized that cultures taken more frequently would probably throw more light on the intermittency of the carrier state, practical considerations made more frequent culturings not only inadvisable—lest the coöperation of the subjects be lost—but physically impossible, since the time spent by the physician doing the field work in addition to a portion of the laboratory work was limited by other duties. Weekly cultures, however, were considered much more satisfactory from this standpoint than the monthly, semi-annual, or annual cultures required in Connecticut for handlers of certified, Grade A raw and pasteurized milk respectively. The number of men cultured each week varied somewhat since a few men would necessarily be taking their "day off" on the day of each visit. Nine of the 85 subjects could be cultured only 3 times or less. No attempt was made to explore the tonsillar crypts since we wished to simulate conditions under which routine cultures are taken by physicians examining milk handlers in Connecticut.

Symptoms of acute rhinitis, tonsillitis, and pharyngitis or other significant clinical findings were noted when the swabs were taken.

In order to determine the effect of drying and other factors associated with delay, duplicate swabbings were made of both the throat and the nose of each man cultured. One swab was used for making "immediate" cultures by the senior author; the other was sent by parcel post to the Bureau of Laboratories in Hartford simulating conditions under which milk handler cultures had been handled since the inception of the Connecticut program described in the publication [1] previously cited. All "immediate" cultures were made not later than 1½ hours after obtaining the swabbings; the majority within 1 hour. The swabs sent through the mails were cultured about 18 hours after collection. The first swabbings obtained were used for "immediate" culturing one week, and for "delayed" culturing the following week. This was carried out serially throughout the study.

"Immediate" plate cultures were made by surface inoculation on both sheep blood agar and on neopeptone-Savita rabbit blood agar.* The order of streaking plates was alternated each week; *i.e.*, sheep blood agar first one week, rabbit blood agar first the following week, and so on in rotation. One-half of each plate was used for streaking the throat specimen, the other half for the nose specimen, from one individual. The surface method of inoculation was chosen because of difficulties which make the use of pour plates impracticable in a central laboratory where specimens arrive for plating at any time of the day or night. Furthermore, since further studies of the strains isolated were planned, detailed observation of sub-surface colonies was not felt necessary.

During the first 3 weeks of the study swabbings for "delayed" culture were inoculated onto moist Loeffler's blood serum slants in the field, and both slants and swabs were then sent through the mails. The slants were subsequently sub-cultured on sheep blood agar for beta hemolytic streptococci. "Delayed" cultures from the swabs were made only on the sheep blood agar in a manner identical with

* The cost of materials for this medium was defrayed by a grant from the Research Fund of the School of Medicine of Yale University.

that employed in making "immediate" cultures. In addition, during 3 weeks of the study the swabs were cultured in dextrose broth with subsequent plating on sheep blood agar.

Only cultures showing colonies or areas surrounded by a clear zone of beta type hemolysis caused by streptococci were considered positive. All positive cultures were studied after isolation in pure culture for morphological, biochemical and serological characteristics. Each strain was tested for final pH in dextrose broth,[3] hydrolysis of sodium hippurate,[4] effect upon methylene blue milk,[5] and fermentation of sorbitol and trehalose.[6] An extract containing the group-specific precipitinogen was prepared from each strain and tested against antisera for the serological groups A, B, C, and D of Lancefield.[7]

Strains obtained directly from Dr. Lancefield were used for the preparation of antisera. The technic of injecting rabbits was as follows: The group A antigen was prepared fresh daily by centrifugalizing a heat-killed broth culture of the strain representative of the group. The other group antigens were prepared by sedimenting broth cultures of the strains used and formolizing the sediment. Antisera were prepared by daily intravenous injections into rabbits over a period of 10–12 days. On the first day, 0.3 ml. of the sediment from 10 ml. of broth culture was injected. The dosage was gradually increased to 2.5 ml. of the sediment from 150 ml. of the respective broth cultures for the last injection. Sera of high precipitin titer could be prepared in 15 days by the use of this method. All sera prepared were checked for specificity. Reciprocal cross-reactions were obtained with the groups A and C antisera when tested against extracts of the strains used for antiserum preparation.

Extracts containing precipitinogens were prepared according to the technic described by Lancefield.[7] In making the precipitin tests, the respective antisera were layered under the extracts in Hektoen tubes by means of capillary pipettes. . Readings were made after 2 hours at room temperature by observing ring formation in the zone between the layers. The contents of the tubes were then mixed and allowed to stand over night in the refrigerator before the final reading was made by observing precipitation in the bottoms of the tubes.

One observation * in connection with the fermentation tests is worthy of note here. Much more rapid and satisfactory results were obtained when the carbohydrates were incorporated in a nutrient broth base containing 0.05 per cent agar than when Hiss's serum water (prepared from human serum) was used. Fermentation of trehalose was often obtained in the former medium within 24 or 48 hours which occurred only after as long as eight or ten days, or not at all in the latter medium. The explanation for this probably involves the occurrence of a zone of the proper oxidation-reduction balance surrounding the particles of agar in colloidal suspension. Certainly it could not in this case be construed as due to the presence of a growth promoting nutritional factor in the broth containing agar. In every instance growth and acid production were first observed about 5–6 mm. below the surface where settling of the agar particles produced a shelf. The organisms appeared to grow at the interfaces formed by the particles and the broth in which they were suspended.

RESULTS OBTAINED

During the 13 week period of the study, 756 throat and 756 nose speci-

* We are indebted to Professor Charles A. Stuart, Department of Biology, Brown University, Providence, R. I., for the suggestion which led to this observation.

mens were obtained from the 85 milk handlers. The number of men cultured each week averaged 63 and none of them was cultured more than once during any one week.

The use of moist Loeffler's slants for primary field cultures proved of no value since not a single positive subculture out of 300 was obtained by this method, whereas 15 of these specimens yielded positive results on one or more of the three sets of primary cultures on blood agar plates. Similar results were experienced with the use of dextrose broth as an enrichment medium after swabbings had been transmitted through the mail. As a consequence, these two lines of investigation were discontinued.

Of the 1,512 sets of throat and nose cultures made, 85 (5.6 per cent) were positive for beta hemolytic streptococci by one or more of the three duplicate blood agar cultures. Of the 1,512 "immediate" cultures on the rabbit blood agar, 65 (4.3 per cent) were positive. "Immediate" cultures on sheep blood agar yielded 69 positive findings in a total of 1,512 (4.5 per cent). A significant decrease was noted with "delayed" cultures on sheep blood agar which gave 33 positive cultures out of 1,512, only 2.2 per cent.

Of the 756 culturings on 85 individuals (throat and nose cultures in each instance), 64 (8.5 per cent) were positive from one or both sources by "immediate" culture on the rabbit blood agar; 66 (8.7 per cent) by "immediate" culture on sheep blood agar; only 30 (4.0 per cent) by "delayed" culture on sheep blood agar. Of the "immediate" cultures made from the first of the duplicate swabbings taken, 10 per cent were positive as against 7 per cent with the second of the duplicate swabbings. However, the first swab yielded 3 per cent positive by "delayed" culture and the second 5 per cent. There appeared to be no difference between sheep blood agar and the rabbit blood agar for this type of work.

During the period of this study 20 (23.5 per cent) of the 85 men gave positive cultures for beta hemolytic streptococci at one time or another. Of the 65 giving negative cultures throughout, 8 were cultured less than 3 times in all.

Six of the 20 individuals found positive were detected only by "immediate" cultures; 1 was detected only by "delayed" cultures and this individual was positive only once.

A further analysis of the results brings out certain facts relating to the transiency of the carrier state. One individual was found positive in the only 3 weeks during which he could be cultured. The second and third positive cultures were obtained in this case in the 4th and 5th weeks following the first. Two individuals were positive in 3 out of 4 weeks cultured, with 1 intervening week negative. Four individuals were consistently positive; 1, 10 times in 10 weeks; 1, 10 in 11; 1, 11 in 12; 1, 12 in 12. One man was positive 6 times in 10 weeks, 5 of these times in successive weeks. Another individual cultured 11 times was positive for 2 consecutive weeks, with a third and final positive culture 4 weeks after the second. Five men were positive only twice out of 10 or more times cultured although not on successive weeks. In 3 of these instances the second positive culture was obtained 2 weeks after the first; in the other 2, 6 weeks after the first positive culture. Five individuals were positive only once. These 5 were cultured 6, 11, 11, 12, and 13 times respectively.

Some degree of statistical association between positive cultures and acute rhinitis was found, although this association was not great enough to indicate any practical value. By com-

parison, the statistical association between acute rhinitis and positive throat cultures was somewhat greater in this series. Perhaps this may have been due to the beta hemolytic streptococci present in deep tonsillar crypts emerging to the surface membranes under the influence of favorable environmental conditions following lowered host resistance, or to drainage into the throat from some focus not reached in swabbing the nose.

A statistically significant association was found between positive throat cultures and concurrent acute pharyngitis or tonsillitis. Thirteen of the positive cultures were associated with these conditions which were observed 22 times out of 756 observations. The association, however, was not close enough to be of practical value. The association between positive cultures and concurrent symptomatology in both throat and nose was greater.

The 5 individuals who showed positive cultures 6 or more times may be regarded as persistent carriers. One of these had a highly significant clinical history. He had been ill in bed for 17 days during the month before this study was begun, with a condition diagnosed as "quinsy sore throat." He later stated that he still had a sore throat when he returned to work. His tonsils were always slightly swollen and red with a small amount of purulent exudate on the surface. Cultures from this man were positive for beta hemolytic streptococci in every week of the study. One other persistent carrier usually complained of a "head cold," and once or twice of a "scratchy throat." His tonsils were small, clean, and apparently normal. The remainder seldom complained of symptoms although an acute rhinitis was found at least once in each case during the study. Two of them possessed small tonsils, normal in appearance. The third stated his tonsils had been removed during his childhood and that he never had had a sore throat. No tags of tonsillar tissue were observed in this man's throat.

The 15 individuals showing positive cultures once, twice, or three times during the study gave the following histories: 3 presented distorted, buried and hard tonsils showing occasionally an excess of debris in the crypts; 3 others had had their tonsils removed several years before and rarely suffered from pharyngitis; the remaining 9 had tonsils essentially normal in appearance. Seven of this group never showed any clinical findings of significance within the scope of the examination.

During the study 40 of the 85 men gave no significant clinical or laboratory findings although 5 of these were observed only 3 times or less. There were 25 individuals who showed symptoms of acute rhinitis, pharyngitis, or tonsillitis at one time or another without ever yielding a positive culture. Three of these were cultured less than 4 times. In this group of 25, acute rhinitis was by far the most common clinical feature.

The results of the biochemical and serological studies demonstrated but little difference between the several strains. Of 77 strains isolated in pure culture, 10 gave a final pH below 4.8 in dextrose broth. The lowest reading obtained was pH 4.2. None of the 77 cultures hydrolyzed sodium hippurate, and only 2 reduced methylene blue in milk cultures. All fermented trehalose but not sorbitol. All gave strong precipitin reactions with our group A antiserum. A slight cross-reaction was noted in the majority of instances with group C antiserum but in no instance with antisera for groups B and D. This cross-reaction was noticed particularly by the ring-test reading and often appeared less strong or disappeared altogether when the over night readings were made.

A number of strains isolated were subjected to tests to determine their fibrinolytic activity * against human fibrin, since studies by Tillett and Garner,[8] Dennis and Berberian [9] and Tillett [10] indicate that this property is closely associated with the virulence or invasive power of a strain. Of 14 strains from 14 individuals so tested, 9 produced fibrinolysis in from 3 to 45 minutes; 2 required 1 to 4 hours; 3 were either negative or required 10 to 12 hours.

DISCUSSION

One comparison serves to show that the milk handlers studied formed a representative group. In this study 4 per cent of throat and nose cultures (considered in combination) were positive from one or both sources by "delayed" culture. During this same period the percentage of positives found by routine state-wide milk handler examinations was 3 per cent. The "delayed" cultures in this study are in all respects comparable to the cultures formerly made routinely on milk handler specimens in Connecticut.

Despite the high carrier incidence found, no outbreaks occurred among consumers of milk from the dairies under study, perhaps because sufficiently large doses of the organisms did not reach the milk. Probably this situation would hold true in general until infection of a cow's udder by a milker or some gross contamination of the milk by other means occurred, since studies of the strains isolated failed to show any distinguishing characteristic which would separate them from known pathogenic varieties. None of the strains showed the mucoid characteristics which have been described for organisms associated with certain milk-borne outbreaks of septic sore throat, but in our practical experience non-mucoid varieties are often the etiological agents in milk-borne streptococcus infections. No attempt was made to determine the toxigenic properties of the strains since the invasive power of these organisms is not necessarily associated with ability to produce an exotoxin. Certain variations were observed in the fermentative action on dextrose of the strains as determined by final pH readings in broth cultures. These readings varied more widely with cultures isolated at different times from the same individual than with cultures from different persons. Two cultures reduced methylene blue but all other cultures from the same individuals failed to do this. Although extracts from many of the strains gave cross-reactions with Group C precipitin serum, the reactions obtained with group A antiserum were much stronger and very clear-cut. Furthermore, reciprocal cross-reactions of the same degree could be demonstrated with the sera used when tested against extracts of the stock strains obtained from Dr. Lancefield which were used for immunizing the rabbits. Therefore, reactions with group C antiserum were undoubtedly nonspecific and we were dealing with group A streptococci in every instance. This is further borne out by the failure of the strains to attack sodium hippurate and sorbitol and their ability to ferment trehalose.

The fibrinolytic studies suggest that a large majority of the strains were potential human pathogens since the studies of other workers [8, 9, 10] indicate a close association between the invasive power of strains of beta hemolytic streptococci and their lytic action on human fibrin.

It is of interest to note here that the beta hemolytic streptococci isolated by routine examinations of specimens from milk handlers throughout the state

* We are indebted to Dr. W. D. Tillett, Johns Hopkins Hospital, Baltimore, Md., whose kind offer to make these studies made it possible for us to secure these data.

while this study was in progress had the same general characteristics as those isolated from the selected group.

Our results clearly indicate that satisfactory means for controlling milk-borne streptococcus infections have yet to be devised. Although doubtless much can be accomplished by furthering the use of pasteurization by greater efforts to eliminate mastitis in dairy herds and by educational methods, no specific mode of attack seems adequate with our present knowledge.

CONCLUSIONS

1. Moist Loeffler's blood serum slants did not prove satisfactory as primary field cultures for detecting milk handlers who were harboring beta hemolytic streptococci in the throat or nose.

2. Sheep blood agar (pH 6.6–7.0) was as efficient as neopeptone-Savita-rabbit blood agar (pH 7.4–7.6) for the growth and detection of beta hemolytic streptococci.

3. Transportation of throat and nose swabbings through the mails resulted in a reduction of approximately 50 per cent in positive findings as determined by making controlled cultures (756 throat and 756 nose) in duplicate before and after transportation. The time elapsing between collection and plating after transportation was approximately 18 hours. Even enrichment cultures in broth after transportation were not so efficient as simple surface inoculation on blood agar; in fact, they were entirely unproductive.

4. Twenty (23.5 per cent) of 85 milk handlers in the representative group selected harbored beta hemolytic streptococci, in throat or nose secretions or both, at least once during the 3 months of the study as determined by weekly cultures. This occurred during January, February, and March, the months when the incidence of positive findings is at its peak in Connecticut.

5. Five of the 20 individuals showing positive cultures were persistent carriers of the organism throughout the study.

6. In the 756 observations made, the association between positive laboratory findings and such clinical symptoms as acute rhinitis, pharyngitis, and tonsillitis, while statistically significant, was not sufficiently close to be of practical value for control purposes.

7. Individuals without tonsils or remnants of tonsillar tissue may be persistent carriers of beta hemolytic streptococci in the absence of significant clinical findings.

8. Our results indicate that strains of beta hemolytic streptococci found in individuals in an average state of health are indistinguishable on the basis of biochemical and serological characteristics from strains of known pathogenicity for man. Assuming the lytic action of any strain on human fibrin to be associated with its invasive power, the majority of these strains are potential human pathogens.

9. With regard to the problem of milk-borne streptococcus infections and under climatic and other conditions similar to those under which this study was made, our results indicate that:

a. Physical examinations alone are not sufficient for the detection of all carriers of beta hemolytic streptococci.

b. Routine laboratory cultures are inadequate for the detection of all carriers, unless made more frequently than is practicable under ordinary administrative conditions.

c. Beta hemolytic streptococci do not withstand drying and other factors associated with delay in transportation to the laboratory sufficiently well for the detection of carriers in a central laboratory with any adequate degree of completeness.

d. Two types of carriers of these organisms, transient (or occasional) and persistent occur among milk handlers in an average state of health, and the organisms of this type carried are potentially pathogenic for man, should sufficient numbers find access to the milk.

e. The percentage of persons harboring these organisms is too large to permit adequate control of milk-borne streptococcus infections by employing any practical measures to eliminate the carriers.

f. Since the frequency of the carrier state seems to bear no close relationship to the frequency of milk-borne streptococcus infections, outbreaks probably occur only when a comparatively large inoculum of infecting organisms reaches the milk from an udder infected by a milker or, probably less often, from some other source.

g. Consumers must be protected against milk-borne streptococcus infections by other means than by periodic physical and laboratory examinations.

NOTE: The authors wish to express their appreciation to Betty Robinton for technical assistance.

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Use of the Terms "Sterile," "Sterilize" and "Sterilization"

IN an official communication from the Food and Drug Administration of the U. S. Department of Agriculture, the Council on Pharmacy and Chemistry of the American Medical Association was asked to express an advisory opinion as to the use of the terms "sterile," "sterilize," and "sterilization," especially when it appears on the labels of agents used "for sterilization of the skin."

The Council adopted the following statement and authorized its transmission to the Food and Drug Administration:

The Council on Pharmacy and Chemistry has formally gone on record as disapproving the use of the terms "sterile," "sterilize," and "sterilization" in a bacteriologic sense other than in their correct scientific significance; *i.e.*, meaning the absence or destruction of all microörganisms. These terms are not relative and to permit their use in a relative sense not only is incorrect but opens the way to abuse and misunderstanding. It is questionable that there are any chemical agents tolerated by the skin which will produce sterility, although there are some which will reduce the bacterial flora of the skin to such an extent that they may properly be described as disinfecting agents. For such agents there is no objection to the use of the terms "disinfecting," "bactericidal," and "bacteriostatic."

Reference was also made to the decision of the Committee on Foods, which is as follows:

Use of Terms "Sterile," "Sterilized," and "Sterilization." The terms *sterile, sterilized* and *sterilization* shall be used in food advertising in their correct scientific significance only. Foods processed to be free of pathogenic organisms or to keep sound and wholesome are not necessarily sterile, *i.e.*, free from viable microörganisms.

—*J.A.M.A.*, July 4, 1936, page 38.

Lumber Camp Inspections

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UNTIL very recently, Maine, in common with most lumbering states that have depended upon remoteness to make lumber camps safe, had given little attention to the sanitary inspection of them. The condition continued, not because the health authorities were remiss, but from a lack of both inspection personnel and legislative authority. In 1931, two relatively small outbreaks of typhoid occurred almost simultaneously at separate camps of the same operator. Indeed, although never so proved and although the camps were located on separate watersheds, their close proximity indicated that the two outbreaks were in effect only one.

The moving incidents are fairly typical of under-regulated lumber camps, wherever located. In Camp Number 1, an open privy was distant only 100 feet from the building where the crew ate. Swarms of flies had easy access to both places. In Camp Number 2, in addition to the same hazards, there was the insanitary situation of a privy built on the bank of a stream above the pool from which the camp water supply was drawn. In accordance with the practice of the Bureau of Health, men of both crews were immunized, and the hazards ordered abated. Parenthetically, one man who had been infected remained a carrier for more than 4 years.

The department, or more definitely the Division of Sanitary Engineering to which was charged the supervision of lumber camps, moved to start routine inspections. It had long been established that such camps, if under only desultory inspection, were excellent culture ground for filth diseases. Still worse, since workmen were drawn from widely separated homes, the breakup of the camps at the end of the working season made the camps the best possible focal points for spreading the disease.

The procedure and experience of the Division of Sanitary Engineering may be interesting. A program of education of lumber operators was plainly indicated. Accordingly, there was called a conference of the division, with representative operators from the membership of the Timber Land Owners' Association. The necessity of adequate camp sanitation and the responsibility of camp operators for the public health were studied and carefully discussed.

The good will gained by the contacts made at this conference still persists, simplifying greatly the work of subsequent supervision, for the committee chosen from among the operators took over the task of extending the good will throughout the whole number of their organization. In that manner, generally by word of mouth, was carried out a campaign of education.

Moreover, this committee with the division's engineers developed a set of regulations agreeable to both the department and the members of the Timber Land Owners' Association. Presented by the joint committee to the Advisory Council of the Bureau of Health and Welfare, the regulations

reached formal approval on December 5, 1933. The 20 sections of regulations which have the force of law, provide for proper location and camp layout, water supply and handling, disposal of wastes, proper toilet and washing facilities, screening, dishwashing, the supply, handling and refrigeration of foods and milk, precaution against spread of infections and vermin, the manner of abandoning camp, provision for a caretaker, fixing responsibility for carrying out the provisions and finally fixing a nominal fine for failure to adhere to the rules.

The Division of Sanitary Engineering considers the program begun in 1931 well justified. During the year in which the Rules and Regulations became law, inspectors visited 143 camps which employed 4,647 men. Five typhoid carriers were found, either as cooks or cook's helpers, called cookees. These people were removed from camp, and typhoid immunization recommended. As a result, nearly 1,000 employees received anti-typhoid inoculations.

In the following year, the inspections showed that of the same number of camps with 5,184 employees, 86 had made substantial improvements in sanitary conditions.

The Division of Communicable Diseases of the Bureau of Health reports that no cases of typhoid fever have been traced to lumber camps since the enactment of definite regulations and the inauguration of routine inspections.

Birth Certificate

EIGHT-YEAR old Agnes was frequently sent home from school for forgetting to bring written excuses for tardiness or absence from classes. One day she was sent home to bring an important document, the birth certificate of her little brother Billy, who was just starting to go to school. Her mother handed her the certificate and cautioned her to take good care of the precious paper.

Agnes turned up at school crying.

"What's the matter now?" asked the teacher.

"I've lost Billy's excuse for being born!" she wailed.

Immediate Allergic Response Following a Schick Test

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AN immediate allergic reaction following a Schick test in individuals who have been immunized against diphtheria is unusual. Recently Harrison [1] called attention to the fact that McGinnis * observed a number of reactions of the immediate type in children who were given a Schick test 8 weeks after receiving an injection of alum precipitated diphtheria toxoid. To one of these individuals it was necessary to give an injection of adrenalin. This report deals with 2 reactions of this type in persons who were given a Schick test some time following immunization with alum precipitated diphtheria toxoid.

The first instance was in a graduate nurse who in 1925 received 3 doses of toxin-antitoxin without a preliminary Schick test. In 1927 a negative Schick test was reported. In 1931 she was employed in Vanderbilt Hospital and a routine Schick test resulted in a "combined reaction." No immunization was attempted at that time. During the years 1932 and 1933 this nurse was either not employed in the institution or was away from work on account of illness. In September, 1934, she returned to work and another Schick test was done with a questionable "positive reaction." On November 19, 1934, the Shick test was repeated and a "positive reaction" was obtained. On December 5, 1934, one subcutaneous injection of 0.5 c.c. of alum precipitated diphtheria toxoid was given after a toxoid skin test was found to be negative. On January 2, 1935, a Schick test was negative. In a routine check-up of all nursing personnel who had received diphtheria immunization during the previous year another Schick test was done on this individual on May 23, 1935. With each of these Schick tests control tests were made in the opposite arm with heated diphtheria toxin.

From 15 to 30 minutes following the Schick test on May 23, 1935, the patient developed marked local reactions at the sites of injection. In some respects these were similar to the immediate reactions described by Neill, Fleming, and Gaspari [2] following the intracutaneous injections of diphtheria culture filtrates. The edema in the arm into which unheated diphtheria toxin was injected was perhaps somewhat more marked than in the arm receiving heated toxin. Shortness of breath, swelling of the face and eyelids, together with itching and urticaria over the upper part of the chest followed immediately. The patient was given a subcutaneous injection of adrenalin and the shortness of breath, itching, and urticaria slowly subsided. The edema at the sites of injection of

* Personal communication to Harrison, 1935.

the heated and unheated diphtheria toxin disappeared more slowly than did the itching, edema, and urticaria over the face and chest.

The second reaction of this type was encountered in a medical student who in November, 1934, was found to have a positive Schick test. A control test with heated diphtheria toxin at that time was negative. A toxoid skin test was performed a few days later and was found to be negative also. This student was given 0.5 c.c. of alum precipitated diphtheria toxoid subcutaneously on December 5, 1934. Four weeks later another Schick test was performed. It was positive and a control test with heated toxin was negative. In order to determine whether or not a dosage of 0.5 c.c. was sufficient to immunize, no further injections of alum precipitated toxoid were made. A Schick test 8 weeks after the single injection of alum precipitated toxoid was negative. To determine whether or not the immunity which had developed was lasting another Schick test was made on May 22, 1935. It was negative.

In October, 1935, 10 months after the single injection of alum precipitated diphtheria toxoid, this individual received a Schick test and a control test with heated diphtheria toxin. Within 10 minutes after the injections it was noted that a marked immediate local reaction developed at the sites of injection similar to those observed in our first case. Immediately following the development of the local reaction the patient developed dizziness, suffusion of the eyes, and became very uncomfortable. The reactions at the sites of injection increased in size and edema developed over these areas. Burning and itching of the feet and of the upper part of the chest and axillae then developed. A few small urticarial lesions developed over the arms. Following a subcutaneous injection of adrenalin the symptoms subsided slowly and after about an hour and a half the urticaria and the itching had practically disappeared although the patient still complained of feeling uncomfortable. A scattered urticarial eruption reappeared on the arms a few hours later. These disappeared, however, after the oral administration of ephedrine sulphate and no further symptoms were noted.

In the other patient no further reaction occurred after the immediate allergic reaction subsided. In each individual both the tests with the heated and unheated diphtheria toxin were negative after 4 days.

These 2 instances of hypersensitiveness, apparently induced by immunization with alum precipitated diphtheria toxoid are the first in our experience. Since neither of the individuals exhibited reactions to the heated toxin before immunization, and since the manifestations of hypersensitiveness followed retesting after a subcutaneous injection of alum precipitated toxoid, it seems probable that these patients became sensitized as a result of the immunization with the alum precipitated toxoid. A similar experience with alum precipitated toxoid has been observed by McGinnis. It seems not unreasonable to predict an increasing incidence of such reactions in the future as a result of the more extensive use of alum precipitated toxoid in diphtheria immunization. This should be borne in mind when individuals who have been immunized are subsequently given Schick tests in order that appropriate procedure for the control of an immediate allergic response may be instituted.

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Inhibitory Action of Colloidal Sulphur in Corper's Agar on the Growth of Four Strains of Mycobacterium Tuberculosis Hominis

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LAWSON and Bengtson [1] found that the growth of a strain of *Mycobacterium tuberculosis hominis*, which was isolated from sputum in the spring of 1933, was inhibited by the addition of 1.5 mg. of colloidal sulphur per 100 ml. of Corper's potato-glycerin agar.

This paper is a brief report of work done in collaboration with the above mentioned workers. Four strains of *Myc. tuberculosis hominis* were used, including the strain used by Lawson and Bengtson. Strain "L" was culture No. 4173 of the American Type Culture Collection. It was isolated by E. J. Lynch, Laurel Heights, Shelton, Conn., May, 1927, and was still virulent to guinea pigs in September, 1927. It came to us on glycerin agar, and probably had been so maintained for a number of transfers. After the third transfer on Corper's potato agar it proved to be a very rapid grower.

Strain "H" was obtained from Dr. Zinsser of Harvard, and was referred to by him as an old laboratory strain originally isolated in Saranac, N. Y. We judge this to be the well known "H-37" strain. This culture was on egg medium when received.

Strain "R" was obtained from Dr. Theobald Smith of the Rockefeller Institute. It was isolated from human sputum by passage through a guinea pig in April, 1933, and had been maintained on egg medium.

Strain "C" was that studied by Lawson and Bengtson and isolated by the latter from sputum in April, 1933. It was received on Corper's agar, on which medium it had passed several generations. Strain "C" was the only one accustomed to Corper's agar when received in this laboratory. Consequently, the results with the first few series of cultures compared with the other strains show discrepancies which, no doubt, were due to the change of culture media.

The medium used was Corper's potato-glycerin agar prepared by the same procedure as followed by Lawson and Bengtson in their work. The reaction of the medium was adjusted colorimetrically to a pH of 7.2 to 7.4, after which the hot agar was distributed into bottles containing sulphur. These were autoclaved for 20 minutes at 15 lb. pressure, removed from the autoclave, the hot agar tubed aseptically into 17 mm. diameter tubes, and slanted in pans of crushed ice. Inoculations were made by smearing a loop of a physio-

* This work was done while Mr. Snider was a Fellow in Bacteriology in the Virginia Polytechnic Institute.

logical salt suspension of the organisms over the surface of the slant. The tubes were closed by inserting a paraffined cork above the cotton plug. A groove was cut in one side of the cork for ventilation.

The following conclusions seem to be warranted:

Strain "L," an old culture of *Myc. tuberculosis hominis*, is a very rapid grower on Corper's agar (good growth appearing in several days), and tolerates at least 200 mg. of colloidal sulphur per 100 ml. of agar; however, some inhibition is noticed on agar containing between 7 mg. and 200 mg. of sulphur. Tests indicate that this strain is only slightly, if at all, virulent for guinea pigs.

Strain "H" tolerated 5 mg. of colloidal sulphur per 100 ml. of Corper's agar, though very little growth is obtained on agar containing this amount of sulphur. It is indicated that this strain is moderately virulent for guinea pigs.

The recently isolated strains, "R" and "C," did not grow on agar containing more than 1.5 mg. of sulphur per 100 ml. These strains are of practically the same age and were found to be highly virulent for guinea pigs.

The original experiments were suggested from observations of Dr. Lawson of the statistics of the incidence of tuberculosis among workers in the dust trades; which indicated that there is a lower incidence among sulphur workers. Our work indicates that there is a negative correlation between the virulence of the organism and the amount of sulphur tolerated. It is apparent that a much larger number of tests must be made before anything positive may be stated as to such a correlation, and we cannot, as yet, give any explanation as to the apparent lower incidence of tuberculosis among sulphur workers. While our results are drawn from study of hundreds of cultures of 4 strains it is essential that the tests for sulphur tolerance be made with a much larger number of strains. We are also unable to explain the reasons for the inhibitory action of sulphur but would venture the hypothesis that by direct action on the sulphur the organism produces toxic thionic acids or thionates. During the process of autoclaving the medium some hydrogen sulphide is evolved, but this is not enough to inhibit growth, as has been shown by experiments. There does not seem to be enough change in the pH of the medium to check growth.

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Causes of Insanity

IN a recent total of 660 cases of Insanity studied by the American Medical Association, the statistics of the causes of insanity were reported as follows:

Drunkenness, 110; Social diseases, 100; Ambition, 73; Excessive Labor, 73; Misfortune, 69; Old age, 69; Disappointment, 54; Love, 47; Religion, 29; Politics, 26; Crime, 10.

Significance of the Small Variety Endameba Histolytica*

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IN December, 1933, the *E. histolytica* producing small variety cysts attracted attention in Chicago and soon assumed a prominent rôle in the parasitology of the human intestinal tract. It reached its climax in June, 1934; declined gradually until December, picked up again in January, February, and March, 1935; and declined until September, 1935. Now it is almost impossible to find an individual heavily infested with the small variety *E. histolytica* cysts.

E. histolytica is a collective species composed of distinct strains differentiated by the size of their cysts. Wenyon and O'Connor state: "Cysts of *E. histolytica* vary greatly in size. There occur strains of *E. histolytica* 7–10 microns in diameter, strains with intermediate cysts, and finally large strains with cysts 15–19 μ in diameter."[1] Also, "Cases infested with the small strain pass small cysts regularly, at any rate for some weeks, with no tendency for the small cysts to be replaced by the larger ones."[1]

In 1909, Elmassian[2] described the first precystic stage of *E. histolytica*, considering it a distinct species and naming it "E. minuta" as distinguished from *E. histolytica*, the large form. He stated that *E. minuta* give rise to cysts 10–16 μ in diameter.

In 1912, Prowazek[3] called these "*E. hartmanni.*" In 1913, Kuenen and Swellengrebel[4] called the large *E. histolytica* forms "*E. tetragena*" and the precysts "minuta" forms. They give the following measurements for *E. histolytica: E. histolytica* 20–40 μ, "minuta" stages 12–20 μ, and cysts 10–15 and rarely 19 μ. In 1914, Ujihara[5] encountered very small as well as large cysts: 10–13 μ, rarely 3.4–4.27 μ. Wenyon and O'Connor,[1] 1917, give 7–19 μ as the diameters for *E. histolytica* cysts. In 1917–1918, Dobell and Jepps,[6] in their study of the diverse races of *E. histolytica* found that the cysts vary from 5–20 μ in diameter; 7–8 μ being commonest among the small cysts. They found that different races of *E. histolytica* may coexist. Brug,[7] 1917, gives 7–20 μ (average of 10–15 μ) for *E. histolytica* cysts. Dobell and O'Connor,[8] 1921, give very careful descriptions of *E. histolytica* and discuss their various races. Brumpt,[9] 1927, speaks of *E. minuta* as a non-pathogenic ameba producing cysts 5–10 μ in diameter. Craig,[10] 1934, reviews the literature on the subject and quotes the work of Dobell and Jepps, who have described 5 races of *E. histolytica* differentiated

* Read before the Laboratory Section of the American Public Health Association at the Sixty-fourth Annual Meeting in Milwaukee, Wis., October 7, 1935.

by the size of cysts produced: 6.6, 8.3, 11.6, 13.3, and 15 μ. He quotes Boeck,[11] who divides the races into 3 groups: small, having cysts 6–9 μ, medium with cysts 10–12 μ, and large, 13–15 μ in diameter.

It may be well to cite the essential characteristics of the *Endameba histolytica* which produce large cysts and differentiate from it those producing small cysts.

TROPHOZOITES

Cytologically the trophozoites of *E. histolytica* have clear, hyaline, refractile, glass-like ectoplasm and finely granular endoplasm. The ectoplasm is best seen in the motile amebae. The motility is usually in a straight line by means of a single large, blade-like pseudopodium which moves rapidly and explosively. Usually the nucleus flows into the pseudopodium first, the red blood cells, if present, and finely granular material follow it. In fresh bloody mucous stools (from acute cases of amebic dysentery) the motility is very rapid. In cold stools the organisms are sluggish and the pseudopodia are more commonly blunt.

In stained preparations (iron hematoxylin) the nuclear membrane appears thin and delicate, upon the inner surface of which is a ring of minute chromatin granules. In the center of the nucleus or less commonly slightly eccentrically is a small black dot of chromatin, the karyosome which is about 0.5 μ in diameter. The karyosome is surrounded by a clear achromatic zone or halo. Between the karyosome and the peripheral layer of chromatin granules is an achromatic linin network. In degenerating amebae, however, there may be masses of chromatin in this network.

PRECYSTIC STAGE

Before encystment the active forms leave the tissues, enter the lumen of the gut where they undergo one or two divisions, diminish in size, lose motility, rid themselves of red blood cells, become spherical or oval in shape, and thus become precysts. In the living unstained condition the precystic *E. histolytica* appear colorless, hyaline, or finely granular, round or slightly oval, measuring 6–20 or more μ in diameter. The distinction between ecto- and endoplasm is less apparent than in the trophozoites. Progressive motility is absent, although blunt pseudopodia may be sent out, but the organisms commonly remain stationary. The nuclear structure is the same as in the trophozoite and the nucleus is usually more clearly visible. The precyst secretes a delicate wall and encysts.

CYSTIC STAGE

In living unstained preparations (saline or water) the cysts appear as colorless, hyaline bodies, usually round, but they may be oval. The cyst wall is refractile, fairly thin, and has a double contour. The nuclei appear as refractile bodies. The chromatoid bodies appear as refractile bars or rods with blunt ends. The cytoplasm is free from inclusions and appears clear. In iodine preparations (5 per cent aqueous potassium iodide saturated with iodine and diluted with equal parts of distilled water for use) the cyst and nuclear walls appear dark brown, the glycogen stains a diffuse brown, and the karyosome appears as a refractile dot. In iron hematoxylin preparations the cytoplasm appears bluish gray, the chromatoid bodies as black rods with blunt ends, the karyosomes and nuclear walls black. The glycogen appears as a vacuole. In old cysts the glycogen and chromatoid bodies are usually absent (used up as reserve food). In cysts with 1 and 2 nuclei the nuclear membrane is usually the same as in the trophozoite, but in the 4 nuclear stage the nuclei are smaller and membrane finer.

The *E. histolytica* producing small cysts differ from those producing large cysts physiologically, culturally, immunologically, clinically, and in pathogenicity for lower animals.

The trophozoites of the *E. histolytica* producing small cysts are usually smaller and not so motile as those producing large cysts, and they do not ingest red blood cells.

Bloody mucous stools from acute cases of amebic dysentery usually show quite large and very motile trophozoites, whereas the trophozoites found in soft stools from mild cases of amebic dysentery and carriers are usually smaller in size, approaching those giving rise to the small variety *E. histolytica* cysts.

The *E. histolytica* producing small variety cysts differ culturally from those producing large variety cysts. They grow infrequently (5–8 per cent) and with greater difficulty in Cleveland and Collier's medium * in which the large variety grows readily and luxuriantly. In my experience, cultures for *E. histolytica* from bloody mucous stools of active cases of amebic dysentery were positive in 100 per cent of the cases (49 cases), but only about 95 per cent of the cultures of stools from carriers of the large variety *E. histolytica* were positive (30 carriers). These figures are of clinical patients seeking medical care and are higher than those of food handlers, some of whom take amebicides before coming for examination in order to get a negative report, the reason being that they may retain their positions or get new ones. Arsenic was found in some of the stools that showed large variety *E. histolytica* cysts which failed to grow in culture.

In culture the trophozoites of the small variety may be small or they may be as large as those of the large variety. They may be long and slender or short and slender. The morphology and motility are identical with those producing large cysts.

The cultures of the small variety *E. histolytica* must be sub-cultured every 24–48 hours, whereas those of the large variety need not be sub-cultured so frequently—every 48–72 hours is sufficient. The *E. histolytica* producing small cysts differ immunologically from those producing large cysts. They fail to give positive complement-fixation when the antigen prepared from the sediment of cultures of *E. histolytica* producing large cysts is used in tests with serum from patients infected with the small variety *E. histolytica*. Complement-fixation tests with sera from 25 patients infected with the small variety *E. histolytica* were thus run, all of which gave negative reactions, whereas sera of untreated cases of the large variety *E. histolytica* tested similarly gave strongly positive reactions in almost every instance. See Table I.

TABLE I

SHOWING THE CORRELATION BETWEEN INFECTION WITH E. HISTOLYTICA (LARGE VARIETY) AND COMPLEMENT-FIXATION TESTS USING THE ANTI-SHEEP SYSTEM

E. histolytica Infection	*Complement-Fixation Tests* +	—	*Total*
Pos. dysentery	13	3	16
Pos. carriers	2	3	5
Neg.	15	135	150
Total	30	141	171

CLINICAL ASPECTS

The clinical picture is rather indefinite, but the patients frequently

* The medium consists of 30 gm. liver infusion agar (Digestive Ferments Co., Detroit, Mich.), 3 gm. dehydrated sodium phosphate, 1,000 c.c. distilled water. Dissolve, tube, autoclave 15 lb. for 30 minutes and slant. These slants are overlaid with sterile serum—saline (1–6), sterilized by filtering through a Berkefeldt filter and testing for sterility. Wassermann negative human inactivated serum, horse, rabbit, or other sera may be used. A little sterile rice flour or rice starch is added to the medium before making sub-cultures if one desires to maintain positive cultures. Rice starch or rice flour need not be added for diagnostic purposes.

TABLE II

No. of Cases				Symptoms						
Diarrhea		Blood								
+	—	+	—	Abd. Pain	Abd. Distress	Cramps	Constipation	Loss of Wt.	Fatigue	Recurrent Diarrhea
39	43	2	80	11	18	5	6	1	1	5

Duration of Symptoms								Effect of Medication Symptoms	
1–7 Days	1–3 Wks.	1–3 Mos.	4–6 Mos.	6–12 Mos.	1–3 Yrs.	4 Yrs.	10 Yrs.	Disappeared	Improved
9	5	17	10	7	7	1	1	15	5

3 cleared on medication and 1 improved.

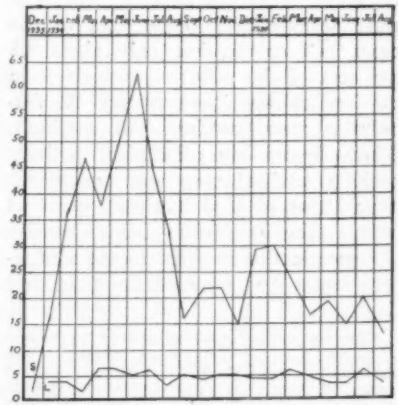
complain of distress and crampy pain in the abdomen followed by 2 or 3 soft stools usually in the morning, a feeling of fatigue, and the elimination of large amounts of gas. Ulceration of the rectum, pus, gross blood, or evidence of organic involvement of the colon have not been encountered nor have liver abscesses been observed with this variety.

The data[12] of 82 cases (7 food handlers of whom only 1 complained of abdominal cramps) are of interest (Table II).

Practically all of the data in Table III are of persons with sufficient intestinal symptoms justifying stool examinations for *E. histolytica*. Routine stool examinations were not made of hospital and clinic patients. (There were, however, several food handlers and contacts with clinical cases.)

There is a difference of opinion as to whether the *E. histolytica* producing the small cysts are pathogenic. The symptoms are much milder than those caused by the large variety, yet they seem to be typical and are eliminated upon specific treatment, especially if the symptoms are of short duration. (The longer the duration of the symptoms, the less readily did the patients respond to amebicidal treatment.) A number of persons, including members of the staff, infected with the small variety *E. histolytica* have been observed whose complaints seemed to have been typical and whose symptoms cleared up upon specific medication. Until we know more about these organisms, infected persons showing symptoms should be treated.

In our experience, liver and lung abscesses have not been produced by the small variety *E. histolytica*. In none of our cases of amebic liver or lung abscesses were we able to find small cysts in the stools, whereas in every such case the large variety *E.*



S = Small
L = Large

FIGURE I—Showing Number of Cases of Amebiasis Among the Clinic and Hospital Patients at the University of Chicago Clinics from the Summer of 1933 to September, 1935.

histolytica had been found. (We have had 4 patients with liver abscesses and 2 with both lung and liver abscesses.)

Our experiments on the pathogenicity for lower animals are still in progress. Thus far, by feeding experiments, we have been able to infect 8 out of 37 kittens with the small variety *E. histolytica* cysts, of which 2 showed minute ulcers of the large bowel, and 10 out of 22 with the large variety.

Intra-rectal inoculations of kittens with bloody mucous stools from amebic dysentery as well as with cultures of the large variety resulted in typical and severe amebic ulceration of the large bowels, whereas similar inoculations with cultures of the small variety *E. histolytica* have thus far failed to produce such results.

Faust, on the other hand, has observed fulminating dysentery in dogs resulting from small cysts taken from human carriers.

DISCUSSION

In the summer of 1933 when the Chicago epidemic started we did not encounter the small variety of cysts. They made their first appearance in December, 1933, and soon assumed a prominent rôle, reaching their height in June, 1934, declining gradually until December of the same year, picking

TABLE III

SHOWING THE NUMBER OF CASES OF AMEBIASIS AMONG THE CLINIC AND HOSPITAL PATIENTS AT THE UNIVERSITY OF CHICAGO CLINICS, FROM THE SUMMER OF 1933 TO SEPTEMBER, 1935

Month and Year	Persons Examined	Number Negative	Large Variety E. Hist.						Small Variety E. Hist.						Large and Small E. hist. Coexisting					
			TPC	TP	PC	P	T	C	TPC	TP	PC	P	T	C	TPC	TP	PC	P	T	C
May, 1933					May 13 Venzke		June 9 Posius													
June																				
July	22	16	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..
August	18	15	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Sept.	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Oct.	5	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Nov.	20	18	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Dec.	24	20	1	..	2	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..
Jan., 1934	53	33	..	1	1	..	1	..	..	..	5	..	..	10	..	..	..	..	..	1
Feb.	104	64	..	2	..	..	1	..	..	..	4	..	..	32	..	..	..	..	..	1
March	169	112	..	1	..	..	1	..	1	..	5	..	..	41	..	..	..	..	..	..
April	100	56	..	..	..	..	..	3	2	1	5	1	..	26	..	..	1	..	..	2
May	124	70	1	2	..	..	..	1	..	..	8	2	..	37	..	..	..	..	..	2
June	187	104	..	..	..	..	2	1	1	..	8	..	..	52	..	..	2	..	..	..
July	160	110	..	2	..	..	..	1	1	..	15	..	..	25	..	..	..	..	..	3
August	147	101	1	1	..	..	..	..	..	..	7	1	..	24	..	..	1	..	..	..
Sept.	189	73	1	..	..	..	1	1	..	..	2	..	..	12	1	..	..	..	..	1
Oct.	156	112	..	..	..	..	..	1	..	..	2	..	..	17	..	..	1	..	..	2
Nov.	126	99	1	1	..	..	1	..	2	..	6	..	..	12	..	..	1	..	..	1
Dec.	114	87	..	1	..	..	..	2	..	..	2	1	..	10	..	..	..	..	..	2
Jan., 1935	166	127	..	..	..	..	..	2	..	..	2	..	..	25	..	..	1	..	..	1
Feb.	153	108	..	..	..	..	..	2	..	..	1	..	..	27	..	..	..	..	..	2
March	215	170	1	..	..	..	..	3	1	..	1	..	..	20	..	..	..	..	..	2
April	163	141	..	..	1	..	..	3	..	..	1	..	..	16	..	..	..	..	..	..
May	183	147	..	..	..	..	..	2	..	..	..	..	..	18	..	..	..	..	..	1
June	174	134	..	1	..	..	..	1	..	..	..	..	..	14	..	..	..	..	..	1
July	163	116	..	1	1	..	..	3	1	..	1	1	..	16	..	..	1	..	..	..
Aug.	84	56	..	1	..	..	..	1	..	..	1	..	..	11	..	..	..	..	..	1

Note: T = Trophozoites. P = Precysts. C = Cysts.

up again in January, February, and March, 1935, and have been on the decline since then (see Table III).

We do not know where they came from nor what is becoming of them. We know that they appeared in December, 1933, became widely distributed among the people of Chicago and its environs and perhaps in the entire country, assuming a prominent place in the parasitology of the human intestinal tract. When these cysts first appeared, they were typically round and quite numerous, most of the positive stools containing large numbers. This condition persisted for almost a year when more pleomorphic forms, irregular in shape, started to appear, and their incidence as well as number in infected individuals have decreased. At present it seems almost impossible to get a heavily infected specimen.

Table III gives the number of cases of amebiasis by month among the hospital and clinic patients examined from the summer of 1933 to September, 1935, at the University of Chicago Clinics. Under "small" we have included all the varieties from 5 μ or less up to about 12 μ in diameter which includes the intermediate forms.

In our experience, *E. histolytica* may produce cysts ranging from 5 μ or less to 20 μ in diameter. At times one encounters cysts so small that only those well trained at the microscope detect them. Since *E. histolytica* cysts range between 5 μ or less to 20 μ in diameter, thus overlapping *E. coli* and *Endolimax nana*, it is important to differentiate between these cysts.

CONCLUSIONS

1. The *E. histolytica* producing small cysts differ from those producing large cysts—culturally, immunologically, clinically, and in pathogenicity for lower animals.

2. *E. histolytica* comprise many strains or "races" differentiated by the size of cysts produced.

3. These different races may coexist in the same individual.

4. The *E. histolytica* producing small cysts seem to produce milder symptoms than the large variety, but we have no definite evidence that they produce intestinal ulceration. Specific medication seems to eliminate the symptoms as well as the parasites.

5. In our experience liver and lung abscesses have not been produced by the *E. histolytica* producing small cysts. These are produced by the *E. histolytica* producing large cysts.

6. Since the *E. histolytica* cysts vary from about 5 μ or less to about 20 μ in diameter, overlapping *E. coli* and *Endolimax nana* cysts, it is important to differentiate these cysts.

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Public Health Degrees and Certificates Granted in 1935*

THE following tables similar to those published in previous years present the data concerning students registered in schools of public health, and the public health degrees granted in the calendar year 1935.

COLLEGE ENROLLMENT IN PUBLIC HEALTH COURSES

Number of students enrolled, and Public Health Degrees and Certificates conferred in the year 1935 in courses requiring at least 1 year of residence, by American and Canadian Colleges

TABLE I

	No. of Students Registered 1934–1935				No. of Degrees Granted 1935		
Name of University	Men	Women	Total	Degrees Offered	Men	Women	Total
University of California	9	13	22	A.B.	0	2	2
				M.A.	0	0	0
				Ph.D. in Hyg.	0	0	0
				Dr.P.H.	0	0	0
Columbia University	9	2	11	M.S. in P.H.	8	1	9
Harvard School of Public Health	20	0	20	C.P.H.	6	0	6
				M.P.H.	13	0	13
				Dr.P.H.	0	0	0
Johns Hopkins School of Hygiene and Public Health	129	16	145	C.P.H.	27	1	28
				Dr.P.H.	5	1	6
				Sc.D. in Hyg.	6	0	6
				Sc.M. in Hyg.	2	1	3
Massachusetts Institute of Technology	73	8	81	C.P.H.	1	2	3
				Dr.P.H.	0	0	0
				M.S.	1	0	1
				S.B. in P.H.	12	1	13
				S.B. in P.H. Eng.	2	0	2
				Dc.S.	0	0	0
University of Michigan	47	36	83	Dr.P.H.	2	1	3
				M.S.P.H.	10	12	22
University of Toronto	14	0	14	D.P.H.	11	0	11
				Ph.D.	0	0	0
University of Western Ontario	0	0	0	D.P.H.	0	0	0
Wayne University College† of Medicine	0	0	0	Dr.P.H.	0	0	0
Yale University	7	3	10	C.P.H.	2	0	2
				Dr.P.H.	1	0	1
				M.S.	0	1	1
				Ph.D.	0	1	1
Total	308	78	386		109	24	133

* Prepared by the Committee on Professional Education
† Formerly Detroit College of Medicine and Surgery

CLASSIFICATION OF PUBLIC HEALTH DEGREES AND CERTIFICATES GRANTED IN 1935

Number of persons receiving degrees and certificates by reason of public health courses completed:

TABLE II

Degree	*No. of Degrees Granted*	*No. of Schools Offering Degrees*
Certificate of Public Health	39	4
Master of Public Health	13	1
Doctor of Public Health	10	7
Master of Science in Public Health	31	2
Master of Science in Hygiene	3	1
Doctor of Science in Hygiene	6	2
Bachelor of Art in Public Health	2	1
Bachelor of Science in Public Health	13	1
Master of Science	2	2
Bachelor of Science in Public Health Engineering	2	1
Doctor of Philosophy	1	3
Diploma of Public Health	11	2
Total	133	

Number of Degrees and Certificates conferred by American and Canadian Colleges for 1933, 1934 and 1935:

TABLE III

School	*Degree*	*1933*	*1934*	*1935*
University of California	A.B.	1	7	2
	M.A.	0	0	0
	Ph.D. in Hyg.	0	0	0
	Dr.P.H.	0	0	0
Columbia University	M.S. in P.H.	7	7	9
Harvard School of Public Health	C.P.H.	8	6	6
	M.P.H	11	7	13
	Dr.P.H.	2	1	0
Johns Hopkins School of Hygiene and Public Health	C.P.H.	41	37	28
	Dr.P.H.	3	6	6
	Sc.D. in Hyg.	13	16	6
	Sc.M. in Hyg.	8	6	3
Massachusetts Institute of Technology	C.P.H.	9	4	3
	Dr.P.H.	0	0	0
	M.S.	1	3	1
	S.B. in P.H.	13	9	13
	S.B. in San. Eng.	0	5	2
	Ph.D.	1	0	..
	Dc.S.	..	..	0
University of Michigan	Dr.P.H.	2	3	3
	M.S.P.H.	16	12	22
University of Minnesota	B.A. or B.S.	..	0	..
	M.A.	3	1	..
	M.S.	..	0	..
	Ph.D.	1	..	..
University of Pennsylvania *	M.A.	3	0	..
	M.S.	1	0	..
	Ph.D.	1	0	..
	Dr.P.H.	..	0	..

TABLE III (Cont.)

School	*Degree*	*1933*	*1934*	*1935*
University of Toronto	Ph.D.	0	3	0
	D.P.H.	10	13	11
	M.A.	2	..	..
University of Western Ontario	D.P.H.	0	0	0
Wayne University College of Medicine and Surgery †	Dr.P.H.	1	2	0
Yale School of Medicine	C.P.H.	6	5	2
	Dr.P.H.	3	4	1
	M.S.	1	0	1
	Ph.D.	4	0	1
Total		172	157	133

* School of Hygiene and Public Health discontinued in 1934
† Formerly Detroit College of Medicine and Surgery

Number of Degrees and Certificates in Public Health granted in United States and Canada, 1933, 1934 and 1935:

TABLE IV

Degrees and Certificates	*1933*	*1934*	*1935*
C.P.H.	64	52	39
Dr.P.H.	9	16	10
M.S. in Hygiene	8	6	3
Sc.D. in Hygiene	13	16	6
Ph.D.	7	3	1
B.S.	13	14	13
B.A.	1	7	2
M.A.	8	1	0
M.S.	26	22	2
M.P.H.	11	7	13
D.P.H.	12	13	11
S.B. in Public Health Engineering	..	..	2
M.S. in Public Health	..	..	31
Total	172	157	133

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An Evaluation of Huddleson's Dye Bacteriostatis and Hydrogen Sulphide Methods for the Identification of Brucella *

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THE purpose of this study was to evaluate Huddleson's method for differentiating organisms of the Brucella group. Five state public health laboratories coöperated. The classification of strains is based on ability to grow on thionin liver infusion agar and on basic fuchsin liver infusion agar and on production of hydrogen sulphide. Seventy-five strains which had been previously classified by Huddleson were distributed. The method of classification and the number of strains used were as follows:

	Growth on		
	Thionin	*Basic Fuchsin*	*Hydrogen Sulphide*
23 *Br. melitensis*	+	+	none or trace in 4 days
23 *Br. abortus*	—	+	moderate to marked in 2 days
29 *Br. suis*	+	—	moderate to marked in 4 days

The results from the five laboratories were tabulated and are summarized in the following statements.

Thionin Plates—Agreement was obtained on all the *Br. abortus* and all the *Br. suis* strains. Five of the *Br. melitensis* cultures failed to grow on this medium in two laboratories, and 8 others failed to grow in one of these laboratories.

Fuchsin Plates—Agreement was obtained on all the *Br. suis* strains. One laboratory failed to obtain growth with 1 *Br. melitensis* culture. This same laboratory disagreed with the other four on 4 *Br. abortus* strains and reported indefinite results with 2 other strains.

Hydrogen Sulphide—All laboratories agreed on all the *Br. suis* and *Br. melitensis* strains, on the basis of results obtained in the specified 4 day observation period. In all laboratories including Huddleson's 4 cultures of *Br. abortus* failed to produce hydrogen sulphide in 2 days or produced only a trace.

The data obtained in this study show that with reasonable care in technic excellent agreement between different laboratories can be obtained in these specific tests for differentiating the organisms of the Brucella group. The classification of the various strains was not as satisfactory but this was due chiefly to difficulty in the interpretation of the results of hydrogen sulphide formation. The *Br. suis* strains were classified best, the *Br. melitensis* strains next and the *Br. abortus* strains less satisfactorily. In view of the trouble encountered in the hydrogen sulphide test, it is recommended that the thionin and basic fuchsin media be used as a basis for classification and that the hydrogen sulphide test be regarded as of secondary importance.

* Abstract of paper read before the Laboratory Section of the American Public Health Association at the Sixty-fourth Annual Meeting in Milwaukee, Wis., October 7, 1935.

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VENEREAL DISEASES

WE have called attention to the fact that among the six major objectives of Thomas Parran, M.D., Surgeon General of the U. S. Public Health Service, the control of syphilis is included.

It is needless to recite the difficulties in the way of control of venereal diseases in general. These have been recounted time and time again. In spite of many agencies devoted entirely or partly to the control of venereal diseases, there has been a constant increase in their incidence, certainly as far as the United States is concerned. There is perhaps no other single disease which plays so large a part in dealing injury to the population of our country as syphilis. Its effects are far reaching. The late Sir William Osler used to put it something like this—Venus and Bacchus are both hard masters; both demand payment, Bacchus promptly; Venus for practically the rest of one's life.

We believe that too many of the agencies interested in the control of venereal diseases have done preaching instead of practical work. Preaching will never get anywhere in the control of venereal diseases. Unfortunately perhaps, we do not at the present day see the pictures described by Astruc, in writing of the pandemic of the 15th century, so severe and far reaching as to be "one of the notable events in medical annals." "From the Pope of Rome on his throne to the lowest scullion in christendom, all were infected with syphilis" (Astruc). Syphilis is now mild compared to what it was at that time. Death is rare except in the very late stages. "Malignant types that are now curiosities were then the regular form of the disease and the mortality was enormous" (Osler). The worst forms of syphilis are seldom seen by general practitioners. A comparatively few years ago, before steam had controlled ocean traffic, one would encounter

practically untreated cases of syphilis on ships after long voyages, as from China to New York, but even in the experience of specialists in large cities, such cases are now comparatively rare. Doubtless if these were seen more often the medical profession in general would realize more keenly than it does the horrors of syphilis, and this would be reflected in the attitude of the average health officer.

A recent study[1] has brought out facts which should have wide circulation, not only among the profession, but also among people in general. In this study a 1 day census covering 49 representative counties in the United States, was made, and reports were received from 39,000 medical sources. It was shown that the prevalence rate for venereal diseases was 7.7 per 1,000 and that there are constantly under medical care for syphilis 4.3 and for gonorrhea 3.4 per 1,000. From the standpoint of control as well as of the patient himself, one of the worst features was shown to be that 71 per cent of those who had contracted syphilis did not apply for treatment until the infection had become late, and of those with gonorrhea 51 per cent did not apply until the disease had reached the chronic stage.

From the facts obtained, it is estimated that there are approximately 493,000 in this country constantly under treatment or observation for gonorrhea and 683,000 for syphilis, a venereal disease population of 1,176,000. Fresh infections per year are 4 per 1,000 for syphilis and 8 per 1,000 for gonorrhea, which justifies the estimate that there are each year 1,500,000 persons seeking treatment for early syphilis or gonorrhea. It is estimated that 7 out of every 100 individuals 40 years of age or over remain potential syphilitic problems as far as treatment goes. The highest attack rate for syphilis is in the early adult ages, 16 to 30 years. The trend for syphilis seems to be upward, with a possible 3.4 per cent increase in the rate per 1,000, but there is a decrease in the prevalence rate for early cases. This cannot be interpreted as evidence of progress in the control of the disease since it has been shown that many cases fail to seek treatment until the late stages and some remain untreated for life. The data concerning gonorrhea actually under treatment show that the number of cases has decreased, but there is evidence that this decrease reflects the neglect of treatment during the economic depression and not a decrease in the number of infections.

We believe that these figures demonstrate the wisdom of selecting syphilis as one of the major points of attack. If they do not tell the story clearly, argument cannot avail. We trust we are not unduly pessimistic in expressing doubts as to the immediate success of the movements against venereal disease proposed. Human nature has not changed greatly during many centuries. Venereal diseases have been with us since the dawn of history. We are entirely too much accustomed to them. Too many of our young men, for example, boast of having gonorrhea and regard it, if not as a matter or pride, as one showing that they know their way about and are men of the world.

Certainly, as far as this country goes at least, the right way of attacking the problem has not yet been demonstrated, in spite of the scientific knowledge we have concerning the diseases, methods of transmission, etc. We cannot frighten the average person about venereal diseases. Like the poor, we have them with us always and have become accustomed to them.

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ANNUAL MEETING OF THE WESTERN BRANCH

MANY things conspired to make Vancouver the health center of the American continent during the meeting of the Western Branch. It is Jubilee year of the city. It is hard to believe that where this beautiful city now stands with its fine buildings, its extensive parks, its health centers, hospitals, and so forth, there was, only 50 years ago, a forest of gigantic firs. Marvelous are the works of man!

The celebration of the Jubilee year began properly on July 1, but His Worship the Mayor of Vancouver issued a proclamation declaring a "Health Week," and granting to the public health organizations meeting there the privilege of introducing the Jubilee festivities. Five organizations met during the week:

Canadian Public Health Association (25th Annual Meeting)
Western Branch A.P.H.A. (7th Annual Meeting)
Conference of State and Provincial Health Authorities of North America (51st Annual Meeting)
Canadian Tuberculosis Association (36th Annual Meeting)
British Columbia Public Health Association (1st Annual Meeting)

Of somewhat more remote interest, as far as public health matters are concerned, is the fact that June 23, one of the days of the meetings, the King's birthday took place and was celebrated in the city. Apart from the very real affection and admiration which all have for the British King, the occasion was made use of to raise money through a dinner for the cancer funds of the Province.

Perhaps most important of all is the fact that the five organizations got together principally in honor of Dr. H. E. Young, dean of the public health profession in Canada, a man who is as well known and as much beloved in the United States as in Canada. His services have been extraordinary in times of plenty but especially so in times of distress. Apart from his personality and his accomplishments, he is none the less noted for the number of young men who have taken their training under him and their inspiration from him.

The first two days of the meetings were given up to the State and Provincial Health Authorities of North America, the Canadian Tuberculosis Association, and the British Columbia Public Health Association. On Wednesday, the third day, meetings of the Canadian Public Health Association and the Western Branch of the American Public Health Association were begun conjointly.

The attendance was good and the papers were exceptionally so. Of course, there was a tendency to consider chiefly those things in public health which concern the West and the Northwest, but, after all, while certain conditions prevail in one section more than another, public health is a unity and all its aspects are of interest to those who have the general cause at heart.

A particularly interesting feature of the meetings was the very graceful gesture of conferring honorary life membership in the Canadian Public Health Association on Dr. Walter H. Brown, President of the American Public Health Association, and Dr. A. J. Chesley, Executive Secretary of the Conference of State and Provincial Health Authorities of North America. Dr. John W. S. McCullough, Toronto, and E. S. MacPhail, of Ottawa, were similarly honored.

The scientific exhibits were especially notable. The commercial exhibits were not extensive, but excellent, and it is particularly interesting to note that the firms supplying these exhibits were keenly interested in public health and the success of these meetings. In fact we have been told repeatedly that they made possible many of the arrangements for the meetings.

Abundant provision was made for the ladies, more abundant and perhaps more entertaining than for the men, probably because the ladies had nothing else to do, while the men were expected to work. However, the men were taken to see the water works of Greater Vancouver, a remarkably fine plant from mountain streams, with the watershed thoroughly protected and policed.

The meeting was notable as being the first joint meeting of the Canadian and American Public Health Associations, an example which we might do well to follow from time to time in the future. Some of the members of the Canadian association stated that the stronger the Canadian association becomes, the stronger will be their admiration and adherence to the parent Association in the States.

The meeting of the Western Branch was brought to a close on Friday evening, when the annual banquet was held, at which the new officers were installed, headed by Dr. H. E. Young as president. The new officers are as follows:

President—H. E. Young, M.D., Victoria, B. C.
President-Elect—Platt W. Covington, M.D., Salt Lake City, Utah
Vice-President—F. D. Stricker, M.D., Portland, Ore.
Vice-President—F. E. Trotter, M.D., Honolulu, Hawaii
Vice-President—J. Rosslyn Earp, Dr.P.H., Santa Fe, N. M.
Secretary—W. P. Shepard, M.D., San Francisco, Calif.
Treasurer—W. F. Higby, San Francisco, Calif.

The banquet was marked by two special features: the granting of an honorary life membership to Dr. Arthur J. McCormack and the presentation to the Western Branch by Dr. Young of a gavel, made of wood taken from the "Beaver," a vessel closely connected with the development of the West and the Northwest.

The members left for Victoria, some at midnight and some on Saturday morning. They were met at the dock by the health authorities of the Province and City. Citizens had provided cars in which the visitors were taken for beautiful drives through the city and about the island, including the wonderful Burchart Gardens.

Too much cannot be said of the hospitality shown by the citizens of Victoria and by the Provincial and City health authorities.

The weather was perfect—a trifle warm but not as warm as the reception which was given to delegates. The whole city conspired to make us welcome. Everything was done for our comfort, and for those who were privileged to attend there will remain for many years the most pleasant and grateful memories of the hospitality shown.

The 1937 meeting place of the Western Branch will be Phoenix, Ariz.

NOISE

DURING the past few decades infectious diseases have been better understood, and controlled to a considerable extent. The incidence of such diseases as tuberculosis, diphtheria, and typhoid fever has declined markedly. Drinking water has been purified. Sewage disposal is carried out in a decidedly more sanitary way than in earlier days. Streets are being kept cleaner. Dwellings, though universally not yet what they should be, are more sanitary. Coincident with these notable achievements from a public health standpoint there has crept into our lives a new

public health problem—noise. This has come about largely as the result of the extensive mechanization of our daily life by such devices as the automobile and radio.

Noise is unwanted auditory stimulation. Thus it may be seen that otherwise beautiful music may be noise. Unlike garbage or street dirt, noise has the peculiar property of radiating instantaneously in every direction from its source to annoy every one within the zone of its penetration.

Loudness is one of the most distressing attributes of noise. Its intensity may be measured in units, called decibels, by which the noise of a busy city street corner can be accurately compared with that of an automobile horn, the roar of a jungle animal, the loud speaker of a neighbor's radio, or the boisterous cocktail party in the wee hours of the morning in an otherwise quiet suburb. Although fatalities have seldom (if ever) been reported from noise directly, the eardrums of heavy artillerymen may be burst, and it is a well known fact that boilermakers become deaf.

Another aspect of noise that is annoying, to say the least, is the ambiguity of its direction. To puzzle about the source and the unfamiliarity of sounds that are distracting often prevents one from devoting his attention to more important things. Intellectual workers are more affected by noise than others. Nevertheless, some experiments with industrial workers indicate that noise prevention in factories tends to increase the quality and quantity of output and the workers have quite generally voiced greater satisfaction with quieter conditions and felt lessened fatigue.

Watson has demonstrated that noise is an elemental fear-producing stimulus. It is one of two things that will frighten a baby that has lived in a protected environment and has never experienced fear. From a physiological standpoint noises tend to increase muscular tension and thus the energies of many people are insidiously dissipated without their awareness. Although unawakened by noises at night, their effect on muscle tension deprives persons of adequate recuperation during sleep hours and unfits them for the ordeals of another day. The persistent accumulation of such effects may be tolerated by some people better than by others, but it is safe to say that millions are stimulated and harassed when they should rest properly to promote well-being.

There is little doubt that the people of the United States are among the noisiest. Much of it is unnecessary. New York City has done much recently to lessen its noise. Many cities, including London, Rome, and Paris, within the last year or two have completely controlled the automobile horn by ordinance. Despite belief to the contrary, there was a reduction in automobile accidents in these cities after these ordinances went into effect—a fine demonstration that drivers could use their heads instead of their horns.

In some countries for many years anti-noise societies have been organized to arouse the public consciousness to the importance of noise prevention. The responsibility of manufacturers and merchants in these matters is clear. Quiet automobiles, street cars, radios, home devices, will be in demand to replace the noisy ones. Individuals have a great responsibility. The time should not be far distant when it may be as much a breach of good manners and public health to to emit an unnecessary noise as it is to expectorate on the sidewalk. When the public gets sufficiently conscious of the need for preventing unnecessary noise, ordinances may not only be passed, but enforced, to protect every one. Hospital zones are now protected by law. If such measures are good for the ill, they

will undoubtedly help to keep many not acutely ill from being uneasy or dis-eased. With noise on the increase, cities must be planned in the future to protect their citizens. The proper construction of dwellings, the arrangement of streets and parks, with sound-absorbing trees, shrubs and vines, and quiet, efficient transportation systems leading to decentralization of overpopulated regions, hold possibilities as yet but little realized.

This problem, so essential to coöperative living, should be a challenge to education. Children should be taught noise prevention as well as cube root. There was a time when we were ignorant of and indifferent to the consequences of polluted water supplies. This is now interesting history. There will be a time when society will look back and say, "How could they exist with such a jumble of barbaric noises to harass the equanimity of man!"

INTESTINAL ANTHRAX

THE older literature carries accounts of a number of serious outbreaks of intestinal anthrax due to infected food. Such reports are now so extremely rare that they deserve mention in order to keep physicians and health officers on their guard, especially as the diagnosis is not easy to make and is only positive after laboratory examinations.

The outbreak in question [1] occurred in September, 1934, in a Rumanian regiment stationed on the western shore of the Black Sea. It was confined to private soldiers, 14.5 per cent of whom were attacked with severe gastrointestinal symptoms, muscular weakness and chills, with a case fatality rate of 30 per cent. Autopsy revealed an extensive enteritis with hemorrhages in the lower part of the ileum. The diagnosis was confirmed by the findings of the laboratory at Bucharest. Several diagnoses were made—food poisoning, paratyphoid B, and even cholera being suspected. The infection was traced to food eaten by the troops in transit between Jassy and Constantza.

REFERENCE

1. An Outbreak of Intestinal Anthrax. *Rev. Igiena Sociala.* Bucharest. 5:690–698, 1935. French Summary (Reviewed in *Bull. Hyg.*, Apr., 1936, pp. 302–303).

In September Journal

Development of Leprosy Clinics in the Control of Leprosy. Lee S. Huizenga, M.D., Dr.P.H.

Health Work on a Sugar Plantation in Hawaii. Ira V. Hiscock.

Administration of Health Education and Health Supervision in Negro Colleges. Paul B. Cornely, M.D., Dr.P.H.

Effectiveness of the Methods of Dish and Utensil Washing in Public Eating and Drinking Establishments. Andrew Krog and Dorothy S. Dougherty.

PUBLIC HEALTH EDUCATION*

"Death In Safety Week"—Under this title, Dr. N. L. Burnette of Ottawa, and in an editorial headed "The Accident Problem: An Opportunity and a Responsibility," automobile accidents are presented as a public health problem.

Dr. Burnette says:

Might it not be that in the major causes of accidents we are dealing unknowingly with a certain proportion of medical, neurological, and psychiatric cases? It would seem worth while to explore this possibility. Certainly we will never touch these cases through our present methods of initial driving instruction and licensing, nor will we ever correct their faulty driving habits through exhortations to be careful.

The editorial further emphasizes the actual ignorance of health and control authorities as to the real nature of the problem.

The derivation of the word accident indicates that it was formerly employed to denote an event unpreventable and unforseen, or due to chance. This conception is still widely held in the public mind, but the sooner the conception of accident as a chance or unfortunate event, the result of "bad luck," etc., is discarded, the better. Scientific evidence has shown that many accidents have an explanation in physiological and psychological defects or maladjustments and inadequacies of the persons involved. Once the relative importance and the character of the various causes of accidents are determined, the solution would become clear and there is no doubt that "the human factor" is one to which increasing attention must be paid

As a result of our ignorance in regard to the underlying factors involved in accidents, the methods of prevention and control which have been employed have lacked any semblance of the scientific approach which is so necessary to success.

The "conclusions" of Dr. Burnette:

1. Death and injuries from automobile accidents have reached a volume where the public health field must be concerned about them.

2. In many major causes of accidents, the reasons advanced are purely guesses.

3. Safety education cannot be successful until its teaching is based on the proper application of tested methods designed to correct conditions for which the cause has been established.

4. Public health organization could bring into the field of safety education a viewpoint at present lacking because public health is based on preventive medicine and the traditional attitude of preventive medicine is experimentally to establish causes and test methods of control before embarking upon propaganda.

5. In public health work, there is already a well established precedent for combining medical knowledge with engineering and pedagogical psychology.

6. Public health should interest itself in traffic accidents, to the end that, with the exception of such matters as highway construction, law enforcement, and certain factors in motor engineering, the public will eventually look to the public health field for the explanation of important problems, as well as leadership in plans for their solution.

The reasoning of the writers sets up a fresh objective for health education in automobile safety. The long range job is to lead public health and other authorities to a new viewpoint and a new line of attack.

Editors of bulletins or house organs will wish to quote liberally from the full text of the article and the editorial.

In *Canadian Public Health Journal*, 105 Bond St., Toronto 2, Ontario. June, 1936. *35 cents.*

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York, N. Y.

To Health Educators Everywhere—To you is addressed this message from Dr. W. W. Bauer, Chairman, Public Health Education Section:

The American Public Health Association, Public Health Education Section, wants to be of the greatest possible service to everyone interested in health education. One of the best ways to accomplish such a purpose is to exchange ideas. There is no one who has a monopoly on originality. Not all the good ideas come from persons whose names are well known, nor do they all originate in the big and well financed health education agencies. The lone worker in public health such as the nurse in a distant county may contribute an idea which is fresher and more original than the most elaborately conceived plans of the health educator in a national agency.

Health education is basically the same in all countries because human beings are basically alike. Differences in language and customs are superficial. The peoples of all lands respond to the same basic appeals.

All this merely leads up to what I wish to say in support of the paragraph "To Our Readers In All Lands" which appeared in this department last month. As the meeting of the American Public Health Association at New Orleans approaches, we are particularly eager to hear from readers of this department in foreign countries. If you cannot be present, will you not send your materials to the Clinic Session of the Public Health Education Section at which they will be discussed. We would like you to send posters, pamphlets, film strips, motion pictures, and exhibits. If the material itself is too bulky, send photographs and descriptions. Be sure to tell how it was made, what it cost for equipment, what it costs to keep in operation, and what responses it has brought. Of especial interest are devices which show originality and which have been developed without the expenditure of unusually large sums of money.

Syphilis Campaigns Desirable—Active effort throughout the year, plus short term intensive campaigns are desirable against syphilis, according to Savel Zimand writing in *Better Times*, Welfare Council, 122 E. 22d St., New York, N. Y. June, 1936. *35 cents.*

The "taboos" associated with this subject can be overcome and the campaign approach is especially useful for this purpose.

The aims of the syphilis campaign should be two-fold: to familiarize the people with the essential facts concerning the disease and to induce as many persons as possible, suffering from syphilis, to seek advice and treatment. At every turn of the campaign difficulties of approach will be encountered, but these can be overcome by tactful methods. . . .

The instruments popularly used for conducting mass health educational work are varied, but whatever their nature, there are certain fundamental conditions without which they cannot accomplish their purpose. These are: scientific accuracy, emotional appeal, concreteness, and simplicity.

A "campaign" may be city-wide or limited to a certain district. In either case, the active support of the medical profession, nurses, social workers, religious leaders, head of industries, etc., should be obtained. The organized health center districts of the health department continuously receive generous assistance from the medical advisory and general advisory committees of the centers.

In addition to this active participation from organized groups, it will prove useful to secure the support of a group of outstanding citizens residing in the district. Such volunteer committees may well include among others a considerable representation of leading conservative elements of the community.

The outstanding clergyman of the district, the respected chairman of the local women's club, the outstanding civic, physician, or business leader, presiding at a meeting for dissemination of facts on syphilis, will do a great deal to bring general community approval of this work. It will often add to the effectiveness of lectures or meetings if they are conducted in church houses or at women's clubs. . . .

The "campaign" approach in itself is not

sufficient. The campaign should be supplemented by personal instruction of individuals through private physicians, health department staffs, nurses, social workers, and teachers, all of whom can and are influencing the conduct of the public. We should try to determine the nature and extent of any objections to the discussion of these diseases, so that, as far as possible, they may be overcome. To this end it is well that the enlightened men and women of the community understand and accept the new orientation on venereal diseases. They will help to destroy the false taboos created about these diseases.

New Orleans in October, 1936—At the Annual Meeting of A.P.H.A. the Public Health Education Section will provide a series of programs for those concerned with adult health education, together with recognition of the specialized interests of those engaged in child health education.

Many other programs will supply useful material and mental stimulus for both adult and child health educators.

As usual, the "lobby sessions" will bring the personal contacts and exchange of experiences which are so valuable to alert public health workers.

If present plans are realized a health education headquarters and display will be maintained. *It is hoped to give special attention to personal conferences.* Delegates are invited to plan in advance outlines of their problems and the kinds of information they would like to gather at New Orleans. They are requested to come well prepared to talk over the details of their local or state health education programs.

A portfolio of specimens, with generous explanatory notations, would be appreciated by many of the visitors.

"Mass Education On Marriage"—How to reach numbers of young people is discussed under the above title in *Journal of Social Hygiene*, 50 W. 50th St., New York, N. Y. March, 1936. *35 cents.*

Marriage education experts such as Professor Maurice A. Bigelow and Paul Popenoe believe that the thing to do is to "begin where they are." In other words, to provide educational information at the point and from the sources through which this large group receives most of its knowledge. Among these sources the newspapers are chief, and Professor Bigelow and Mr. Popenoe have experimented during the past year with a number of feature articles, prepared in popular style by special writers. Such titles as "By All Means," "Let 'Em Marry Young," "How to Make Love to Your Wife," and "Do College Girls Make the Worst Wives?" vie with feature story headlines on other topics, and wide circulation is assured by release through press services such as the King Features Syndicate and the *Every Week Magazine*, which serve hundreds of newspapers. Even the dignified *New York Times Magazine* recently published an original article by Mr. Popenoe entitled "Is There a Scarcity of Good Husbands?" Under these attention-getting titles the authors of course set forth solid, accurate educational facts, and the many inquiries and comments received prove the effectiveness of this method of education.

Newspaper fiction also may be effective, as witness the short story, "No Right to Marry," by Margaret Culkin Banning, reprinted in this number of the Journal from the *New York Herald-Tribune's* Sunday magazine, *This Week*.

The monthly magazine, another source of popular information, are open channels for marriage education. Such articles as "Marriage a la Campus," by Florence Haxton Britten, in November, 1935, *Red Book*, which summarized the opinions of a dozen or so college deans on the pros and cons of marriage during student days, and the articles "Can't I Save My Marriage?" and "Repeat Course in Matrimony," in *Good Housekeeping*,* discussing divorce prevention, are real marriage education placed where it will do the most good.

The radio, too, which reaches this same group of "normal young people" offers great opportunity for marriage education, but so far this opportunity has not been fully realized. Many single talks, and short series of talks, on marriage and family problems have been given by various speakers, but it yet remains for some leader in this educational field to build up a day-to-day program and the large popular following

* See issues for January, 1935, and February, 1936.

among young people which such a program deserves. Neither have the possibilities for dramatizing such material over the air been utilized, to the extent that they offer.

One more great medium of education, for young and old, should be more fully employed for constructive efforts. When the motion picture screen and its talking accompaniment really sets about showing young people normal, wholesome marriage and family life with the same thoroughness with which the seamy side of these relations has in the past often been exploited, progress in mass education on marriage will really occur. Recent films show promise in this respect. Let us hope for further encouraging developments.

Learning the Language and Understanding It—When we interpret health work to the community, or seek to influence the health habits of adults and young people we face a wide range of technics from which to select our weapons.

Not many of us will have the time to become thoroughly at home with printing, photography, optical projection, broadcasting, etc. But we do need to know our way about, and to talk intelligently with those who are specialists in one or the other of the technics we may wish to utilize.

A similar situation faces many men in commercial advertising. What to do about it is illustrated by suggestions to advertising people who need to learn more about photography and the reproduction of photographs. The answer is entitled "Camera!" by R. Hertzberg.

A superficial acquaintance with cameras and dark rooms, gained from occasional visits to studios and engraving shops, proves embarrassingly inadequate when you are called upon to discuss . . . with the production people at the plants. Needless to say, such ignorance leads to unnecessary grief and expense.

The simplest, cheapest, and most pleasurable way to acquire an understanding of photography is to become a photographer yourself—on a small scale, of course. If you don't already own a camera . . . buy an inexpensive one that will take pictures at least "vest pocket" size (1⅝ x 2¼ inches), or larger. Also buy a developing and printing kit, which includes everything you need for the actual production of photographs. You can spend as little as five dollars for the whole outfit, camera and all.

The bathroom at home, with the shade drawn and a breadboard across the hand basin for a work table, makes a perfectly good darkroom. Shoot a roll of film of the wife and kids in bright sunshine, read the instruction book, and go to it. You'll get a tremendous kick watching the images come up on the negative, and you'll get another thrill when you make the positives, or contact prints.

After an hour's dabbling, you'll have a clear picture (no pun intended!) of how a negative, made by a camera from a . . . is "printed" photographically on sensitized zinc to make a planographic printing plate for the offset press; and how a similar negative . . .

Of course, other manipulations are involved. For instance, . . . These other operations become mere details once you see for yourself how a negative is made from a piece of copy (which is a positive) and how other positives can be made from negatives and more negatives from these positives and progressively without end.

The next step is to learn how enlargements and reductions are made from either negatives or positives, usually the former. The popular Eastman Kodak book "How to Make Good Pictures," will give you a general idea; a visit to your photographer's studio will make the mechanical-optical processes clear. From then on, planographic and intaglio printing will hold no terrors for you.

If you are naturally lazy or lack experimental inclinations, make a date to spend several hours, or half a day, at your photographer's place, and at least observe how he works. However, prepare yourself by reading the early chapters of the aforementioned book, so that you won't have to ask silly questions. Your picture man will be glad to give you darkroom demonstrations, because a better understanding of photography on your part will simplify his job to a large extent.

Of course, a visit to the offset or roto house that does your work will also be of educational value. If you display any knowledge at all of photography, you'll find that the men will be anxious to explain every detail and will take the time to do so. The visitor who knows nothing about photography is rushed through with a lot of

mumbled explanations. He is merely impressed by the dazzling lights, the smelly darkrooms, the air-conditioned retouching rooms and the noisy pressroom, and he leaves more confused than edified.

In *PM*, 325 W. 37th St., New York, N. Y. June, 1936.

A series of first hand contacts might be worked out in a city, or even a state where a group of interested people could come together for the purpose. Some one must do some wise planning in advance.

"For Sale by Superintendent of Documents"—Written by, published by, and for sale by, are usually functions of three different arms of the federal government. This simple fact seems unknown to many makers of reading lists, and editors of bulletins and other periodicals.

Elsewhere we mention a pamphlet, "What Every Teacher Should Know," etc. This was written by the U. S. Office of Education (through a staff member). It is published, or rather printed, by U. S. Government Printing Office; but it is "For sale by the Superintendent of Documents, Washington, D. C."

The simpler reference is the clearer, and takes less space. Readers usually wish to know not alone the name of the author, but also the sponsoring agency of the government. Beyond those facts, mention only "Superintendent of Documents, Washington, D. C.," and the price. To add "U. S. Government Printing Office" adds no more information of value than to mention the name of the printer of your annual report, or your new folder on measles. And it does cumber the page to add words without significance.

When an order is sent direct to the sponsoring part of the government the filling of the order must be delayed until the letter and the cash sent to the Office of Education (or whatever it may be) has been forwarded to the Superintendent of Documents.

Certain publications, carrying a price and "for sale by the Superintendent of Documents," will be supplied free if the sponsoring government agency is asked for a single copy. But this fact need not be allowed to confuse the printed reference.

Taboo Words—We need a taboo list, a black list of words not to be used in public health education. Some words are easily misunderstood. Other words are dull and heavy. Yet others are inaccurate, at least as they are commonly used. In the third class are words discussed in *Bulletin*, National Tuberculosis Association, 50 West 50th St., New York, N. Y., issue for July, 1936:

> One of them is our old friend "tubercular" as a substitute for "tuberculous." The adjective "tubercular" (it can never be used correctly as a noun), means a nodular formation in the tissues of the body that is produced by something other than the tubercle bacillus. Any process caused by the tubercle bacillus is a "tuberculous," not a "tubercular" process.
>
> Recently a newspaper in California wrote about a "tubercular test in a preventive campaign." Certainly the use of the term "tubercular" to describe a tuberculin test is about as wrong as wrong can be.
>
> Another of these tabooed words is "preventative." Once in a while there is use for the noun "preventative" though usually the shorter word "preventive" is quite as good if not better. There is no use for the word "preventative" as an adjective; it is distinctly out of place used thus.

Hygeia, July, 1936—Material to use or to adapt:

> Noise . . . Quacks and quackery . . . The tetanus bacillus . . . Cataract: its facts and fallacies . . . Tomorrow's drivers (safety education) . . . Cancer education: fight cancer with education . . . The care of the skin . . . How to follow the doctor's orders . . . The Martin family vacation (episodes V, VI, and VII) . . . The preschool child who misbehaves . . . The language of the heart

(electrocardiograph) . . . The gases of the air in medicine . . . Walking revelations (walking posture and its correction; see illustration) . . . Curious stories about health (a series) . . . A visit to Jenner's home . . . Everything in its proper place—even dogs . . . How diseases came with the white man (a series) . . . The ductless glands: the foremen of the body . . . Ivan Petrovich Pavlov: the Darwin of physiology (died in Moscow, February 27) . . . New books on health . . . Questions and answers.

In "School and Health":

Can the teacher help children to bear their physical defects and peculiarities? . . . A new health education course for a high school (Amherst, Mass.) . . . A high school class gets things done (Camden, N. J.) . . . A lesson plan on teaching safety in the third grade (Abcata, Calif.) . . . A challenging problem in health and home economics (Norristown, Pa.) . . . New health books for teachers and pupils.

A copy free to a health worker or health teacher. Write to 535 N. Dearborn St., Chicago, Ill.

The "Martins," the Bauers, and Others—Here is more from the Bauers about their creation, the "Martin" family. Says Dr. Bauer:

I am not sure whether my good friend, Evart Routzahn was trying to start an argument when he asked "Why Memorize a Broadcast?" What Mrs. Bauer and I had in mind when we wrote that introduction and suggested the use of the Martin Family Vacation episodes in a darkened room with a radio in the spotlight was that it would be necessary to memorize broadcasts because of the absence of sufficient light to read the scripts. At the same time, we are grateful for the suggestion that the whole broadcasting process be reproduced in the bright light of publicity.

With respect to the further question about granting permission to produce material provided no admission charge is made, we amplify our attitude as follows: It was our purpose to grant, without further correspondence, the right to produce these plays by genuine health agencies. Such agencies customarily do not make an admission charge. It was not our purpose to grant permission to those who might wish to use this material in order to make money for purposes which might not be in accord with the objectives of public health. It is quite true, as suggested, that possibly we are, as health educators, giving away too much. Neither *Hygeia* nor the authors will raise any objections to having admission charged providing we are informed in advance as to who is going to charge admission and for what purposes. Success in getting a paid audience for health education material would, indeed, as suggested by Mr. Routzahn, "be a real achievement, and a distinct advance in getting attention for health messages."

Health Education for Pan America—The recent meeting in Washington of Pan American Conference of National Directors of Health gave quite a little attention to health education and to activities which call for phases of health education. Resolutions covered recommendations as follows:

Campaigns for the prevention of industrial accidents, etc., etc.

Extension of free maternity centers

Special education of women in hygiene and public health

Popularization of the newer knowledge of nutrition

Campaigns of education against drug addiction

Education of mothers in the prevention of trachoma

The above is reported in *Bulletin*, Pan American Union, Washington, D. C. June, 1936. *15 cents.*

HEALTH EDUCATION

The following references, not reaching the editor, are reported in *Library Index*, National Health Council, 50 W. 50th St., New York, N. Y.:

Report of committee on physical education. British Medical Association. *British Medical Journal*, Supplement (London), April 18, 1936, p. 149–88.

Motion pictures for health; Buffalo's experience in using this method of education, R. W. Osborn. *Bulletin* of the National Tuberculosis Association (New York City), 22:37–38 (Mar.), 1936.

A need in rural health education, J. T. Anderson. *Journal of Health and Physical Education* (Ann Arbor, Mich.), 7:140–41, 208 (Mar.), 1936.

Community health program, E. W. Morris, D.D.S. *Journal of the American Dental Association* (Chicago), 23:495–501 (Mar.), 1936.

MAGAZINE ARTICLES

"Blood Will Tell," by M. H. Irwin (recent findings as to different types of anemia); "The Family Takes a Vacation," by S. J. Crumbine, M.D.; "Alcohol and Modern Life," by W. A. McAndrew. *National Parent-Teacher Magazine,* 1201 16th St., N.W., Washington, D. C. July, 1936. *15 cents.*

"Don't Catch Cold," by H. M. Reed. *Collier's.* Jan. 4, 1936. "Read these easy-to-take instructions for preventing that cold you may get or for routing the one you had before you read this."

"Educating the Young Driver," by A. W. Whitney; "Tommy Will Not Go to Sleep," by S. J. Crumbine; "Solid Foods for Sound Babies," by M. H. Irwin. *National Parent-Teacher Magazine,* 1201 16th St., N.W., Washington, D. C. April, 1936. *15 cents.*

"Fake Accidents, Inc.," by P. W. Kearney. *Saturday Evening Post.* April 11, 1936. A side-light on a phase of "safety" controls.

"Fools on Wheels." Editorial, *Collier's.* Feb. 8, 1936:

> Suppose the railroads or the steamship companies or any other group of corporations killed 36,000 people and injured 864,000 in a single year. Suppose, also, that the chief cause of all this death and injury was plain human carelessness. Can you imagine the political passion which would be aroused against the guilty? Can you picture the denunciations and the oratory and the general fury?

"Man of Brains," by G. E. Pendray. *Today,* 152 W. 42d St., New York, N. Y. June 27, 1936. *15 cents.* Sketch of Dr. Harvey W. Cushing.

"The Next Great Plague to Go," by Thomas Parran, M.D. *Survey Graphic,* 112 E. 19th St., New York, N. Y. July, 1936. *30 cents.* "With the courage and authority characteristic of his years of leadership in public health, Dr. Parran tells how syphilis can be uprooted." 9 pages; numerous "pictographs" which bulletin editors will wish to reproduce (ask *Survey Graphic* for permission).

"School Health in Hawaii," by T. R. Rhea. *Journal,* N.E.A., 1201 16th St., N.W., Washington, D. C. April, 1936. *25 cents.* With picture from Palama Settlement.

IN HEALTH BULLETINS

A Conference on Mental Health in Education is reported in *Monthly Bulletin,* Massachusetts Society for Mental Hygiene, 3 Joy St., Boston, Mass. Jan.-Feb., 1936.

"Social Hygiene Education for the General Public," by H. I. D. McGillicuddy. *Bulletin,* Massachusetts Society for Social Hygiene, 1145 Little Bldg., Boston, Mass. March, 1936. The need and the opportunity.

"Cut Prices in Health" in *Birmingham's Health,* Birmingham, Ala., discusses the decreased local appropriations for public health services as compared with appropriations for other public services.

Diagnostigrams is mimeographed, one or two pages on a pleasing legal cap sheet, for promoting the Early Diagnosis Campaign in New Jersey. The single line headings at the left, underlined, help to make easy reading the news of the state tuberculosis activities. Every issue is accompanied by several sheets of ready made press copy with blanks for easy localization. New Jersey Tuberculosis League, 15 E. Kinney St., Newark, N. J.

Some of the perils of vacation are presented in July, 1936, *Red Cross Courier,* Washington, D. C. The *Courier* has been dressed up, inside and out including new headings, descriptive and attention getting, which may have been suggested by the recently adopted heading style of *Literary Digest.*

BOOKS AND REPORTS

Veterinary Military History of the United States, with a Brief Record of Veterinary Education, Practice, Organization and Legislation—*2 Vol. By Louis A. Merillat, Lt. Col., Vet. Res., Chief Veterinary, American Expeditionary Forces, and Delvin M. Campbell, Lt. Col., Vet. Res., Editor, Veterinary Medicine, sponsored by the American Veterinary Medical Association. Chicago: Veterinary Magazine Corporation,* 1935. 1,173 pp. Price, $10.00.

The authors state that chapters I to IX are, in fact, the preface of this history, since the ground covered is too complex and extensive to be introduced in a few words. The authors say:

> We have undertaken for the first time not only the writing of an American veterinary history but also cultivating a taste for its details. . . . This book is the outgrowth of a series of articles published in 1932 on "The Veterinary Service of the American Expeditionary Forces" on the Western Front of the World War which were intended for publication in book form. . . . With these data as the inspiration it was decided to expand the manuscript so as to include the entire history of the military-veterinary service of the United States from the Revolutionary War to the present time, and to include a list of the World War veterinary officers, their ranks, promotions and assignments, and finally of all who had served in our army since 1879 when, by act of the Congress, graduation from a recognized veterinary college was made a prerequisite to such service.

Perusal of these volumes enables one to discern that the World War was not only the inspiration for the book but the explanation of why in the title they have used the word "military." If cognizance of these facts were not taken one might be inclined to criticise the title.

The authors have done a splendid work in compiling the history of our veterinary existence in the United States and have produced one of the most valuable contributions to veterinary science as a whole that have ever been made, for which they are to be congratulated.

This veterinary history will be of interest to the medical profession for two reasons: (1) that veterinary medicine and human medicine are allied subjects; (2) that at present the veterinary corps of the United States Army is under the direction of the Surgeon General, and so veterinarians, medical men, and others will find much of interest in this history.

The authors said in their preface that they were not only writing an American veterinary history but also cultivating a taste for its details. This is an actual fact. The reviewer has found the reading of these volumes intensely interesting, and would recommend them to all who desire to know the detailed facts not only of American veterinary history but of the experiences and functions of the veterinary corps during the World War.

It is regrettable that the authors in their prejudices against agricultural colleges and experiment stations have failed to include in this history the valuable contributions of these organizations the personnel of which have contributed unceasingly to the advancement of veterinary science in the United States.

The book is abundantly illustrated, mostly with reproductions of photo-

graphs. The veterinarians of the country in general and especially those who served during the World War, will recognize many of their old friends and comrades, and this holds true for the medical men who served with them.

A. J. DURANT

The Medicine-Man of the American Indian and His Cultural Background—*By William Thomas Corlett, M.D., L.R.C.P. Springfield, Ill.: Thomas,* 1936. 369 pp. Price, $5.00.

This is an unusual and an extremely interesting book. As the author says, it is not a medical book and contains "as much religion as medicine, and more theology than pathology." However, it tells us of the medicine-man of the American Indians and gives an insight into their way of thinking and their primitive methods in surgery as well as medicine. There has been among all peoples an ingrained longing for those who were able to mitigate pain and to preserve life, and all peoples have had physicians and priests, often combined in one person.

Among the Indians it has been impossible to separate the religious beliefs and rites from the practice of the healing art, and this accounts for the sacerdotal atmosphere found here and there throughout the book. Even in the witchcraft which was found among these aborigines, and in spite of its attendant enormities, we find useful elements, and in many ways the medicine-men were useful to the people and were held in high esteem.

In Part I we find a discussion of the racial origin of the American Indian and the peopling of the New World, the author concluding that the American Indian belongs to the Mangoloid division of the human race and that he came from Asia via the Bering Strait to the New World between 8,000 and 20,000 years ago.

In this Part also are treated the diseases of Indians, their religion, and their medicine-men. Following this, the various sections of the country beginning with the Arctic region and ending with Patagonia, are considered. The book shows a great amount of study and is amply documented.

The author frequently quotes Dr. Roy Lee Moodie, whose work on paleopathology is so well known, and credits him with giving advice and assistance in reading the manuscript as well as for lending photographs and other illustrations of objects of prehistoric as well as later periods. He points out that accounts of the aborigines have dwelt too much on their savagery and barbarism and not enough on their good qualities. What has ever been written finer than the speech of Nezahualcoyotl to his nobles, ending with this beautiful paragraph:

> The great, the wise, the valiant, the beautiful—alas! where are they now? They are all mingled with the clod; and that which has befallen them shall happen to us, and to those that come after us. Yet let us take courage, illustrious nobles and chieftains, true friends and loyal subjects, let us aspire to that heaven where all is eternal and corruption cannot come. The horrors of the tomb are but the cradle of the Sun, and the dark shadows of death are made brilliant by the light of the stars.

We cannot but feel sad that some of these splendid tribes have disappeared, that many of those remaining have become degraded through contact with the white man, and perhaps all of them are on the way to extinction.

The book is beautifully printed and profusely illustrated. Specimens showing operations such as trephining and even double trephining, dressings of head injuries, cupping for pneumonia, etc., are given. An excellent index completes the volume, which can be recommended on account of its historical as well as its scientific and social interests.

MAZÝCK P. RAVENEL

The Specificity of Serological Reactions—*By Karl Landsteiner, M.D. Springfield, Ill.: Thomas,* 1936. 178 pp. Price, $4.00.

This work is a critical review of both the old and new literature pertaining to serological specificity, with particular reference to the chemical aspects of specificity. It is a revision and extension of an earlier German edition by the author. It includes a discussion of the serological specificity of natural antigens and antibodies, including proteins and cellular antigens, of artificial conjugated antigens and reactions with chemical substances of known constitution, and a consideration of chemical investigations of specific cell substances, including carbohydrates and lipoids.

The author has included material sufficiently elementary to orientate the inexperienced worker in this field, and at the same time has included material of such complexity as to make the work invaluable to workers more familiar with this type of study. The bibliography accompanying each chapter is particularly valuable. The volume is unusually free from typographical or other errors. It is well printed on non-glazed paper. The name of the author assures us of the authenticity of the material. NEWELL R. ZIEGLER

Food, Health and Income: Report on a Survey of Adequacy of Diet in Relation to Income—*By John Boyd Orr. New York: Macmillan,* 1936. 72 pp. Price, $1.00.

It seems to be a well established principle of economics that more adequate nutrition and resultant better health are found in persons in the higher income groups than in those in the lower groups. This is confirmed by the noteworthy study conducted by Dr. Orr for the Rowett Institute, reported in this well printed monograph.

In order to determine the adequacy of the diets of the people of Great Britain, they were divided into 6 groups according to income, and the average diets of each were compared with the optimal requirements for nutrition, as suggested by Stiebeling of the U. S. Department of Agriculture.

The average diet of the poorest group, comprising some 4½ million people, was found to be deficient in every essential constituent, whereas in the highest income groups there was complete adequacy and even a surplus of all food constituents. Thus, in the poorest group, the consumption of milk was only 1.8 pints per head per week, but in the wealthiest group it was 5.5 pints. The wealthiest group spent about twice as much for eggs and fruits as the poorest group, but the consumption of bread and potatoes was practically uniform in all groups. To make the diet of the poorer groups adequate would involve an increase of from 12 to 25 per cent in their expenditures for milk, eggs, butter, fruit, vegetables, and meat.

"A review of the state of health of the people of the different groups," concludes the author, "suggests that, as income increases, disease and death rate decrease, children grow more quickly, adult stature is greater, and general health and physique improve."

The practical application of the newer knowledge of nutrition is a social problem demanding economic statesmanship, not only in Great Britain, but in the United States. This interesting report should be helpful in drawing attention to this world-wide problem. JAMES A. TOBEY

"Do's and Don'ts for Health, Happiness and Abundant Life"—*By John J. Sutter, M.D. Bluffton, Ohio: Bluffton News Printing and Publishing Co.,* 1935. 151 pp. Price, $1.00.

A compendium of short statements covering human habits and ailments

ranging from athlete's foot to "tantrums and tears."

Its chapters deal with brief essentials of health and happiness, prevention of diseases, accidents and hazards, nutritional diseases, and "essentials" for infants, children, and adults.

This is a unique presentation of the menaces to health, happiness and life, and the means of their avoidance.

CHARLES H. KEENE

The Diagnosis and Treatment of Pulmonary Tuberculosis—*By John B. Hawes, 2nd, M.D., and Moses J. Stone, M.D. Philadelphia: Lea & Febiger,* 1936. 215 pp. Price, $2.75.

Unique in its field, this small volume furnishes for practitioners, social workers, nurses, and students a brief, concise, and yet fairly complete summary of the present-day knowledge of the diagnosis and treatment of pulmonary tuberculosis. From more than a quarter of a century in the practice of medicine the authors have drawn vividly on their vast experience and have made a valuable contribution to the literature on tuberculosis.

A foreword by Dr. Richard C. Cabot sums up admirably the chief characteristics of the book, *viz.*, "the firm hold on essentials and its corresponding elimination of 'frills.' I recognize and admire the book's closeness to experience. It tells what its writers have found reliable in the years of their intimate contact with patients."

Beginning with a short chapter on historical aspects of tuberculosis, the reader accompanies the patient through the steps incident to his first visit to the doctor's office, the taking of the personal history, the physical examination, the diagnosis, and the treatment.

Modern methods used in diagnosis and treatment are described, including the roentgenological examination, the significance and importance of the tuberculin test in diagnosis, laboratory methods, pneumothorax, and other forms of compression and collapse therapy. Respective chapters are assigned to the subject of heliotherapy and the part climate plays in the treatment of pulmonary tuberculosis.

After having surveyed the results of various attempts by physicians and others in different parts of the world to produce a serum, vaccine, or drug as a specific treatment for pulmonary tuberculosis the authors conclude "it is evident that the long looked for specific drug, vaccine, or serum which will have a specific curative effect on tuberculosis is still as elusive as in the days of Robert Koch."

Separate chapters are devoted to pulmonary tuberculosis in childhood with special reference to its significance, pulmonary tuberculosis in the aged, diet, rehabilitation, the heart in pulmonary tuberculosis, questions relating to marriage and pregnancy among the tuberculous, dangerous trades, and finally a chapter on the prevention of tuberculosis.

The reviewer suggests more recent reference for the chapter on Rehabilitation of the Tuberculous, a phase of the community control of tuberculosis which has been greatly neglected in the past.

For completeness a brief summary and selected references for supplementary reading follow the majority of the chapters, and throughout the book are well considered diagrams, charts and X-ray reproductions.

Public health administrators also will find this book of interest and of value for ready reference purposes.

BERNARD S. COLEMAN

A Textbook in Physiology—*By William D. Zoethout, Ph.D. (5th ed.) St. Louis: Mosby,* 1935. 694 pp. Price, $4.00.

Since 1916 this splendid text has

gone through 5 editions. The present one has been extensively rewritten, and chapters on material concerning which modern research is bringing such rapid changes have been brought up to date.

This book is definitely an effort to reach the happy medium between the extensive and intensive text needed by students and specialists in medicine, and the much briefer and often too elementary short texts in physiology.

Following brief chapters on Protoplasm, Enzymes, Tissues, and the "Translocation of Matter" the author discusses the usual divisions of physiology. The practical side of physiology has been kept in mind, and the chapters on nutrition, physical exercise, mental work, and fatigue are good bases for personal hygiene guidance.

Certain chapters are headed by lists of related subjects with page references to the text. This is a decided help in giving students the concept that body parts and "systems" are definitely interrelated. CHARLES H. KEENE

BOOKS RECEIVED

THE CHILD OF THE TEXAS ONE-TEACHER SCHOOL. By Annie Webb Blanton. Study No. 17, Bureau of Research in the Social Sciences, The University of Texas Bulletin, Austin, Tex. 111 pp.

CREATIVE RE-EDUCATION. By Frederick Peterson, M.D., Ph.D., LL.D. New York: Putnam's, 1936. 112 pp. Price, $1.00.

THE DOCTOR AND THE PUBLIC. A Study of Sociology, Economics, Ethics, and Philosophy of Medicine, Based on Medical History. By James Warbasse, M.D. New York: Paul B. Hoeber, Inc. Medical Book Department of Harper and Brothers, 1936. 572 pp. Price, $5.00.

FOOD, FITNESS AND FIGURE. By Jacob Buckstein, M.D. New York: Emerson Books, 1936. 252 pp. Price, $2.00.

THE FUNDAMENTALS OF PERSONAL HYGIENE. By Walter W. Krueger, Ph.B. 2d ed. Philadelphia: Saunders, 1936. 294 pp., ill. Price, $1.75.

HANDBOOK ON SOCIAL WORK ENGINEERING—AN OUTLINE. By June Purcell Guild, and Arthur Alden Guild. Richmond, Va.: Whittet & Shepperson, Publishers, 1936. 133 pp. Price, $1.50.

HUMAN GENETICS AND ITS SOCIAL IMPORT. By S. J. Holmes. New York: McGraw-Hill, 1936. 414 pp. Price, $3.50.

THE PATIENT AND THE WEATHER. Vol. I, Part II—Autonomic Integration. By William F. Petersen, M.D., assisted by Margaret E. Milliken, S.M. Ann Arbor, Mich.: Edwards Bros., 1936. 780 pp. Price, $9.00.

PRINCIPLES AND PRACTICE OF RECREATIONAL THERAPY FOR THE MENTALLY ILL. By John Eisele Davis, with Dr. William Rush Dunton, Jr. New York: Barnes, 1936. 206 pp. Price, $3.00.

PROSTITUTION. By Tage Kemp, M.D. Copenhagen, Denmark: Levin & Munksgaard, Publishers, Nörregade, 6. 1936. 253 pp., paper bound. Price, $10.00.

SLIM & SUPPLE: A NEW SYSTEM OF SWEDISH EXERCISES FOR YOUNG AND OLD. By Barbro Leffler-Egnell, translated from the Swedish by Greta Olsson. New York: Appleton-Century, 1936. 209 pp., ill. Price, $2.00.

THE TEACHING OF ARCHERY. By Dave and Cia Craft. New York: Barnes, 1936. 81 pp., ill. Price, $1.00.

FACTS ABOUT COMMERCIALLY CANNED FOODS. American Can Company. "A collection of discussions from factual advertisements." New York, 1936. 36 pp.

SEX-EDUCATION. By Maurice A. Bigelow. New York: The American Social Hygiene Association, 1936. 307 pp. Price, $1.00.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Diphtheria in Large Cities—Again evidence is presented that where diphtheria immunization is practised consistently, diphtheria deaths and morbidity drop. Though diphtheria death rates in the large cities were lower in 1935 than in 1934, there are far too many preventable deaths from this cause.

ANON. Diphtheria Mortality in Large Cities of the United States in 1935. J.A.M.A 106, 24:2060 (June 13), 1936.

Less Typhoid Fever—In the annual compilation of typhoid fever deaths in the largest cities of the United States is shown a gratifying reduction during the year 1935 as compared with 1934. All sections except the South Atlantic and the Western groups showed decreases.

ANON. Typhoid in the Large Cities of the United States in 1935. J.A.M.A. 106, 23: 1983 (June 6), 1936.

They Still Go Unvaccinated—At this college, 33 of each 1,000 students admitted never having been vaccinated. Those with scars gave an immune reaction in 75 per cent of cases; those with history of vaccination but no scar revealed 35 per cent immune reactions, while only 5 per cent of those never vaccinated were immune.

BULL, R. C., and RANKIN, S. L. Smallpox Immunity in 5,000 College Students. Pub. Health Rep. 51, 23:734 (June 5), 1936.

What Can Health Do for Safety?—Pleading for public health participation in highway accident prevention, this Canadian author points out the opportunities for the experimental method of preventive medicine in establishing causes and testing control measures.

BURNETTE, N. L. Death in Safety Week. Canad. Pub. Health J. 27, 6:267 (June), 1936.

New Field for Nurses—Summary of the way various countries are using the nurse in commercial aviation and in the development of air ambulances.

CARTER, M. L. The Nurse and Aviation. Internat. Nurs. Rev. 10, 2:118, 1936.

Interviewing the Midwife—Leading questions by which supervising nurses may evaluate midwives' services are discussed.

DERRYBERRY, M., and DANIEL, J. The Development of a Technique for Measuring the Knowledge and Practice of Midwives. Pub. Health Rep. 51, 24:757 (June 12), 1936.

Toward Preserving Public Health—Another excellent paper on the economics of public health. (We have had several lately.) The author quotes the remark that, though the horse can be led to water but not made to drink, still it is possible to make him thirsty. Health education is the way to make the public thirsty for health. A dispassionate view of medical economic problems ends the paper.

EMERSON, K. Health Security. New Eng. J. Med. 214, 24:1211 (June 11), 1936.

Nursing for a Community—Nursing service for a community, to be adequate, must be based upon a satisfactory program of nursing education that prepares nurses not only for hospital service but for the varied health and sickness needs of the community. Suggestions are made for setting up necessary machinery for distributing this service, so that it will be available according to the needs of the individual

and family, rather than according to his ability to pay.

GOODRICH, A. W. The Community Nurse. Ohio Nurses Rev. 11, 2:78 (Apr.), 1936.

Difficulties in Polio Prophylaxis—Accepting the hypothesis that the virus of poliomyelitis enters the body through the olfactory tract, and migrates intracellularly through the nervous system to the cord, where it makes the tissue resistant to reinfection, and that only then does it escape to excite antibody formation in the blood, it is probable that artificially induced antibodies are not necessarily a measure of nerve tissue resistance.

HUDSON, N. P., *et al.* Factors of Resistance in Experimental Poliomyelitis. J.A.M.A. 106, 24:2037 (June 13), 1936.

Antirachitic Milk Values—Relative potency of vitamin D, as it affects human infants, and as found in the various commercial vitamin D milks is the subject of this report, presented in two installments. Its object is to aid physicians, health workers, and milk producers alike.

JEANS, P. C. Vitamin D Milk. J.A.M.A. 106, 24:2066 (June 13), 1936.

Eugenics vs. Cancer—Controlled experimentation with mice reveals definite information about hereditary factors which influence development of cancer. But human nature, being what it is, there is little chance of putting this information into practical use.

LITTLE, C. C. The Present Status of Our Knowledge of Heredity and Cancer. J.A.M.A. 106, 26:2234 (June 27), 1936.

All about School Child Health—What the school teacher and the school nurse may do to make their combined efforts a satisfactory health education program for school children, leads this series of excellent articles on school hygiene.

WHITNEY, A. Team work in School Health Education. Pub. Health Nurs. 28, 6:372 (June), 1936.

BEATTY, W. W. Sex Education in the Public School. p. 376.

CLINE, L. V. The Nurse in the Modern School. p. 380.

CHAYER, M. E. Changing Conceptions of School Nursing. p. 385.

PLEASANT, F. J. A New Deal for the Preschool Child. p. 393.

Tuberculosis among Nurses—Incidence of tuberculosis among nurses employed in tuberculosis sanatoria is reviewed, with valuable recommendations on ways to minimize the hazard.

MARIETTE, E. S. The Tuberculosis Problem among Nurses in a Tuberculosis Sanatorium. Am. J. Nurs. 36, 6:605 (June), 1936.

Cheerful Findings about Heart Disease—In this Canadian study it was found that 75 per cent of heart deaths occurred in people over 60, and that the percentage of later deaths is increasing. The average age at death grows greater, and hence the causes of death must change.

OILLE, J. A. The Problem of Heart Disease in Adults. Canad. Pub. Health J. 27, 6:261 (June), 1936.

Home Emergency Care of Postpartum Patients—Describes the procedure used in giving hypodermoclysis to postpartum patients in the home to prevent shock from hemorrhage and to replace fluids lost through dehydration.

PERRY, H. Hypodermoclysis for the Post Partum Patient in the Home. Am. J. Nurs. 36, 6:588 (June), 1936.

Milk Improvement in England—This discussion of the "accredited herd" program in Great Britain will be of interest to American sanitarians who are concerned with the improvement of our milk supply, not so much because of new proposals, but as a comparison with this country's problems.

RABAGLIATI, D. S. The Accredited Producers' Scheme of the Milk Marketing Board. Pub. Health. 49, 9:310 (June), 1936.

Home of General P. G. T. Beauregard on Chartres Street—The fine example of New Orleans Colonial architecture, home of the Confederate hero, is now being saved as a shrine for his relics and Civil War records by a group of New Orleans patriots under the leadership of Gen. Allison Owen.

THINGS IN NEW ORLEANS YOU WILL WANT TO SEE

THE Sub-Committee on inspection trips has arranged a tentative program for the Annual Meeting of the American Public Health Association, which embraces visits to the New Orleans Water Purification Plant and a survey of the sewerage and water systems of New Orleans.

The Sewerage & Water Board, which is a non-political board, was organized and began to function in 1899. Before that time rain water collected in wooden cisterns and the raw Mississippi River water were the only sources of drinking water in the city. At that time the water was obviously not very pure or clean.

The following table will give an idea of the improvements which have resulted in the water supply since the formation of the Sewerage and Water Board.

The water purification station, which has been copied in the essential details by several municipalities around New Orleans, is a model type of the rapid filtration systems generally in use for turbid waters.

The Purification Plant is reached readily in 20 minutes from the center of town and transportation will be provided, with the coöperation of the Sewerage and Water Board, for those desiring to visit the plant, where competent guides will explain the technical details which are necessary to put out the very satisfactory water which is furnished the City of New Orleans.

There are 28 filters with a total filtering area of 40,068 sq. ft. When operated at rated capacity, they are capable of filtering 112 million gallons of treated water per day.

	Before Treatment (Miss. River Water)	*After Treatment* (N.O. Tap Water)	*Maximum Allowed Under U. S. Public Health Standards*
Physical Characteristics (Parts per million)			
Turbidity	600	0.5	5.0
Color	10	5	20
Odor	Earthy	0	0
Chemical Characteristics (Parts per million)			
Calcium (Ca)	38	15	..
Magnesium (Mg)	8	6	100
Iron (Fe)	0.03	0.015	0.3
Zinc (Zn)	..	.03	5.0
Lead (Pb)	..	.001	0.1
Copper (Cu)	..	.05	0.2
Sulphate (So4)	42	44	250
Chlorides (Cl)	16	16	250
Total Solids	850	150	1,000
Bacterial Characteristics (1934)			
***B. Coli* per 100 ml.**	1,940	0.06	1.0

This particular trip should prove of interest to all attending the Convention, and especially to the Laboratory and Public Health Engineering Sections.

In addition to providing water, the board is responsible for the adequate drainage of the city, and the achievement of this objective has been one of the triumphs of science in New Orleans.

New Orleans, as a whole, is below high water in the Mississippi River, which borders it on one side, and the greater portion of it is also below high water in Lake Pontchartrain, which bounds it on the north, and high water in the navigation canals and high level outfall drainage canals, which extend into or through the city. The city depends for its protection on the great levees along these waters, and the further judicious operation of the Bonnet Carré Spillway built by the United States Government at Bonnet Carré, La. As compared with mean tide level, the various portions of the city range from, say 14 ft. above to 3 ft. below mean tide, and extreme high lake tides are, on rare occasions, as much as 5 ft. above mean tide, and the highest water in the river reaches over 20 ft. mean tidal level.

From the above, it is evident that New Orleans depends on pumping for the removal of all the storm water and sewage which has to be removed.

The pumps used both in the sewerage and drainage work were especially designed by the engineer in charge of the Sewerage and Water Board Power and Pumping Stations; the drainage pumps being of very unusual size and high efficiency, and the sewage pumps combining very high efficiency with the ability to pump any kind of trash which enters sewers without any tendency to become obstructed thereby.

It might be said that pumps modeled after the pumps referred to are in use in Holland, Calif., and various other places. Their inspection and explanation alone would amply repay any visitor interested in mosquito eradication by drainage or in the salvage of marsh lands for agricultural purposes.

A third function of the Sewerage and

Water Board is the disposal of sewage. The sewage, consisting of polluted waste water from houses, factories, etc., is collected in a system entirely separate from the system of pipes and canals that receive the surface water or storm drainage. House connections, 76,306 in number (serving about 110,000 premises), and nearly all 6″ in size, conduct the sewage into 653.7 miles of sewers. More than 556 miles of these are 8″ in size, others are larger; the largest main sewer is of brick, 7′ in diameter. There are 9,236 manholes giving access to these sewers.

The sewerage system covers about 652 miles of streets and receives the sewage of about 110,254 premises with the scattering of population over very wide areas.

Eight first-lift pumping stations lift the sewage on its way to the main pumping stations, and, in three cases, a second lift pumping station is needed before the final discharge stations can be reached, making 11 intermediate stations in all. These are all electrically driven and automatically operated, without any screening of the sewage or any attendance other than periodic visits to see that all is well.

Four final discharge stations A, B, and D, on this side of the river, and C in Algiers, pump the sewage through cast iron discharge mains into the Mississippi River well down stream, whence the continuous flow of the river soon brings it to the Gulf. These too, are electrically driven, and operate without screening of the sewage, but attendants are constantly on duty.

In the 11 intermediate stations there

The Conciergerie—Old New Orleans—Combined entrance and janitor's quarters—only conciergerie in the United States—of the original Ursuline Convent on Chartres Street; built in 1727. Mississippi Valley's oldest building. Through these gates "Les Filles a Cassette" passed.

are 27 pumps having a total capacity of 306,180,000 gallons per day. In the 4 final discharge stations there are 15 pumps having a total capacity of 528,768,000 gallons per day. Pumping Station A, alone (the largest of the sewage pumping stations) pumps 17,000,000,000 gallons in a year, enough to make a lake 10′ deep, covering an area of over 3 square miles. Even this vast quantity of water is lost in the immensity of the flow of the river; the sewage never reappears at the surface; and no test made further down stream has ever indicated its presence in the river water.

Another trip of particular interest which has been arranged, will require approximately a day for its accomplishment, and to which will be attached a small cost, is a visit to the National Leprosarium at Carville, as well as a visit to the State Capitol at Baton Rouge, with its marvelous capitol building.

Located in New Orleans also is one of the finest hospitals of the U. S. Public Health Service, the Marine Hospital, which is located next to Audubon Park, one of our most beautiful places of interest in the city. It is thoroughly modern and from a standpoint of handling imported communicable diseases, will amply repay any visit made by health officers or others.

It must not be forgotten that New Orleans has located on its west bank a very modern Quarantine Station, where the most efficient methods of gaseous disinfection are carried out. The officer in charge of the station at present has gained world-wide note for his constant research for improvement in the use of hydrocyanic gas in the disinfection of vessels which come into port and require treatment.

There are many canneries of syrup and seafoods located in or near the city which should offer an attractive exhibit of modern methods in the handling of the most important industry of food canning.

The laboratories devoted to rodent control are operated continuously, and in view of the interest in endemic typhus and the other members of the Rocky Mountain spotted fever group, as well as bubonic plague, offer an opportunity for those unacquainted with the methods used for rodent examination to make a study of the subject.

A particular matter of interest, which is an object lesson of the value of drainage, and which is a great source of pride to New Orleanians, is the reclamation of the marsh area just behind the shores of Lake Pontchartrain, which has resulted in the creation of one of the largest and most beautiful parks in the world, the New Orleans City Park, as well as the creation of a park area and future residential district, where before only swamps existed, and in the erection of one of the finest airports in the world, if not the finest.

Many other inspection trips of in-

St. Louis Cathedral—The site of this old church was laid out by Bienville when he founded New Orleans in 1718; the present church is the third to occupy the grounds. It was built in 1796.

Madame John's Legacy—This building dates back to the days before the Louisiana Purchase (1803) when the colorful Dons of Spain imposed upon the resentful Creoles of Louisiana an obnoxious government.

terest for those of special trend are available and ample facilities for transportation will be provided.

Space does not permit any further statement, at this time of the points of interest in New Orleans, but the visitor may be assured that every effort will be exerted to make available for him all places of sanitary, as well as historical interest, and anyone contemplating visiting New Orleans, who is interested in any particular subject, is invited to write in advance to the Chairman of the General Committee of Arrangements, Dr. J. M. Batchelor, New Orleans, La., in order that the desires of the writer may be satisfied when he visits New Orleans.

See Opposite Page for Hotel Rates

ANNUAL MEETING INFORMATION

HOTELS

NEW ORLEANS, LA.

Hotels	*Room Capacity*	*Single*		*Double*		*Apartments*
		Without Bath	*With Bath*	*Without Bath*	*With Bath*	
Bienville	120	$2.00	$2.50-$3.00	$3.00	$3.50-$6.00	
De Sota	100	1.50	2.50- 3.00	2.50	3.00- 6.00	$6.00-$12.00
Jung	650	....	2.50- 4.00	....	3.50- 6.00	
LaSalle	...	1.50- 2.00	2.00- 2.50	2.50- 5.00	3.00- 5.00	5.00- 7.00
Monteleone	600	1.50- 2.00	2.50- 4.00	2.50	3.50- 6.00	
New Orleans	275	....	2.50- 3.50	....	3.50- 5.00	
Pontchartrain	200 (80 apts.)					4.00- 10.00
Roosevelt	...	....	3.00- 5.00	....	4.00- 8.00	10.00
St. Charles	...	....	2.50- 5.00	....	3.50- 8.00	8.00- 20.00
Orleans	50	1.50	2.00- 2.50	2.00- 2.50	2.50- 3.00	

.....*(Cut off on this line and mail to the hotel of your choice)*.....

HOTEL RESERVATION BLANK FOR NEW ORLEANS MEETING

AMERICAN PUBLIC HEALTH ASSOCIATION

50 WEST 50TH STREET, NEW YORK, N. Y.

OCTOBER 20-23, 1936

To .....
(Name of Hotel)

Please reserve for me ..... rooms for ..... persons for the A.P.H.A. Meeting.

Single room ..... Double room .....

Maximum rate per day for room $..... Minimum rate per day for room $.....

I expect to arrive ..... If date of arrival is changed I will notify you at least 24 hours in advance.

Please acknowledge this reservation.

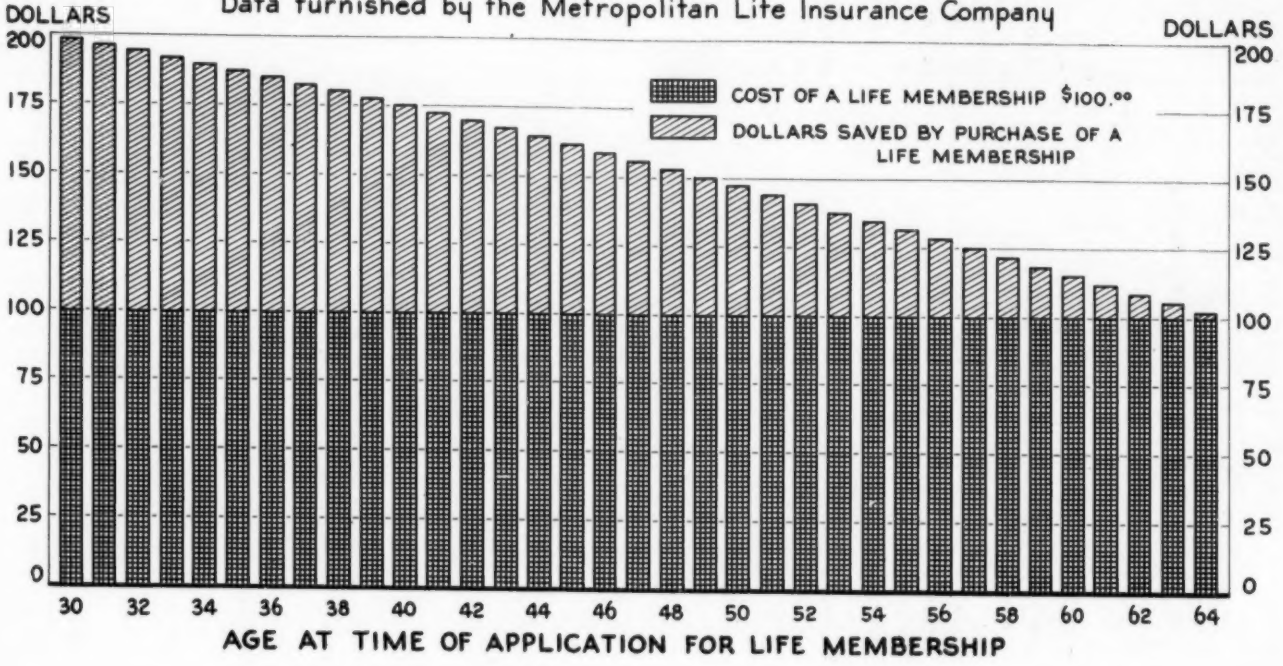
Name .....

Street address .....

City ..... State .....

DOLLARS SAVED BY THE PURCHASE OF A LIFE MEMBERSHIP
[In place of payment of annual dues]
IN THE AMERICAN PUBLIC HEALTH ASSOCIATION

Data furnished by the Metropolitan Life Insurance Company



ASSOCIATION NEWS

Recommended Change in the Constitution and By-Laws

THE Committee on Constitution and By-laws, acting on a suggestion made at a meeting of the Governing Council in Milwaukee, has recommended a change in the Constitution to provide that all members of the Executive Board will automatically be members of the Governing Council, thus obviating the confusion which has sometimes occurred. Some members of the Executive Board have been able to attend meetings of the Governing Council only by sufferance, although they were charged with acting for the Council during the intervals between Council meetings. The first paragraph under Article III Governing Council, therefore would read:

A. Composition: There shall be a Governing Council consisting of:

1. The officers of the Association and the elective members of the Executive Board.

Nominations for the Governing Council

IN accordance with the By-laws of the Association, the Nominating Committee reports the following nominations for the Governing Council. The Constitution provides that "upon the petition of twenty-five Fellows, the Nominating Committee shall add the name of any Fellow to this list, providing such petition is received fifteen days before the Annual Meeting."

The ten Fellows receiving the highest number of votes on a written ballot cast by the Fellows present and voting at the Annual Meeting in Milwaukee will be elected for the three year term 1936–1939.

G. F. Amyot, M.D., D.P.H.
Health Unit
North Vancouver, B. C.

G. W. Anderson, M.D.
Department of Health
Waban, Mass.

E. L. Belknap, M.D.
Globe Union Manufacturing Co.
Milwaukee, Wis.

A. J. Chesley, M.D.
Secretary and Executive Officer
State Department of Health
Old Capitol
St. Paul, Minn.

C. F. Craig, M.D.
Tulane University
New Orleans, La.

W. J. V. Deacon, M.D.
Department of Health
Lansing, Mich.

Marjorie Delavan
State Department of Health
Lansing, Mich.

Almon L. Fales
Metcalf & Eddy
Boston, Mass.

A. Grant Fleming, M.B.
Medical Building
McGill University
Montreal, Canada

J. C. Geiger, M.D.
Health Officer
San Francisco, Calif.

Major A. Parker Hitchens
Walter Reed General Hospital
Army Medical Center
Washington, D. C.

Prof. Murray P. Horwood
Massachusetts Institute of Technology
Cambridge, Mass.

Charles H. Keene, M.D.
Professor of Hygiene
University of Buffalo
Buffalo, N. Y.

W. H. Kellogg, M.D.
University of California
Berkeley, Calif.

H. E. Kleinschmidt, M.D.
National Tuberculosis Association
50 West 50th Street
New York, N. Y.

Pearl McIver, R.N.
Division of Quarantine
U. S. Public Health Service
Washington, D. C.

H. S. Mustard, M.D.
1923 E. Monument Street
Baltimore, Md.

Raymond S. Patterson, Ph.D.
Life Conservation Service
John Hancock Life Insurance Company
Boston, Mass.

Grace Ross, R.N.
Department of Health
Detroit, Mich.

Henry F. Vaughan, Dr.P.H.
Commissioner of Health
Detroit, Mich.

By Petition

Earnest Boyce, C.E.
Division of Sanitation
State Board of Health
Lawrence, Kans.

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

Charles F. Blankenship, M.D., 302 Marine Hospital, New Orleans, La., Assistant Surgeon, U. S. Public Health Service, with Regional Consultant, 4th District

Anthony S. Culkowski, M.D., City Hall, Lackawanna, N. Y., Health Officer

Charles P. Drury, M.D., City Hall, Marquette, Mich., Health Officer

John E. Dunn, Jr., M.D., Rm. 204, Federal Office Bldg., San Francisco, Calif., Assistant Surgeon, U. S. Public Health Service

Oswald F. Hedley, M.D., Maloney Bldg., University of Pa., Philadelphia, Pa., Passed Assistant Surgeon, U. S. Public Health Service

Frederick W. Kratz, M.D., State Health Dept., Bismarck, N. D., Passed Assistant Surgeon, U. S. Public Health Service

Samuel B. McPheeters, M.D., Health Dept., Goldsboro, N. C., Director, Wayne County Health Dept.

Robert A. MacTaggert, 4 Nott Terrace, Schenectady, N. Y., Acting Health Officer

William L. Orr, M.D., Ozark, Ala., Health Officer, Dale County Health Unit

Hermon B. Smith, D.V.M., P. O. Box 71, Farmville, N. C., Health Officer

Michael J. Sullivan, M.D., 66 W. Main St., Meriden, Conn., City Health Officer

Russell E. Teague, M.D., C.P.H., 306 Guthrie Bldg., Paducah, Ky., Health Officer

Laboratory Section

Lewis W. Brown, M.D., 160 Roseville Ave., Newark, N. J., Pathologist, Essex County Hospital for Contagious Diseases

John M. Danneker, 1425 Lesseps St., New Orleans, La., Chemist, City Board of Health

Isaac H. Erb, M.B., 67 College St., Toronto, Ont., Canada, Pathologist, The Hospital for Sick Children

Anne G. Irwin, 519 Dexter Ave., Montgomery, Ala., Bacteriologist, State Dept. of Health

Raymond A. Kelser, Ph.D., D.V.M., Army Medical Research Board, Ancon, C. Z.

Walter H. Nolan, 63 Old Harbor St., S. Boston, Mass., Volunteer Assistant, Bacteriological Laboratory, City Health Dept.

James E. O'Brien, 545 W. 111 St., New York, N. Y., Chief Bacteriologist, W.P.A.

Monroe A. Rosenbloom, M.D., 1100 Park Ave., New York, N. Y., Senior Clinical Assistant Gynecologist, Out-Patient Dept., Mt. Sinai Hospital

Morris Scherago, D.V.M., University of Ken-

tucky, Lexington, Ky., Head, Dept. of Bacteriology

Public Health Engineering Section

Louis A. Cornelius, 2089 Robinson Rd., Grand Rapids, Mich., Member, Advisory Committee, Local Health Dept.

Clare H. Currie, C.E., Webster City, Ia., Consulting Sanitary Engineer

Benjamin L. Grimes, Jr., Box 933, Juneau, Alaska, Territorial Sanitary Engineer

Horace G. Tuggle, 440 Reese, Memphis, Tenn., Director, Sanitation and Malaria Control, Shelby County Health Dept.

Industrial Hygiene Section

Norman DeNosaquo, M.D., 219 Butler Ave., Providence, R. I., Student, Harvard School of Public Health

Charles C. Dills, 2028 New Hampshire St., Lawrence, Kans., Industrial Hygiene Engineer, State Board of Health

Joseph J. Eller, M.D., 745 Fifth Ave., New York, N. Y., Consulting Dermatologist

Donald O. Hamblin, M.D., Calco Chemical Co., Inc., Bound Brook, N. J., Chief Physician

Harry J. Johnson, M.D., Life Extension Institute, 25 W. 43 St., New York, N. Y., Chief, Examining Staff

Masayashi Yamaguchi, M.D., Dept. of Public Health, Yale Medical School, New Haven, Conn., Student

Child Hygiene Section

Elizabeth I. Adamson, M.D., 67 Park Ave., New York, N. Y., Consultant in Psychiatry

Emilio de Soto, M.D., Harriet Lane Home, Johns Hopkins Hospital, Baltimore, Md., Student

Nathan E. Silbert, M.D., C.P.H., 19 Goodale Rd., Mattapan, Mass., Student, Harvard School of Public Health

Public Health Nursing Section

Rocia Dority, R.N., Box 404, Canton, Ga., Field Consultant Nurse, State Dept. of Health

Jose Familar, Central Luzon Agricultural School, Nueva Ecija, P. I., Supervising Teacher of Hygiene and Sanitation, Bureau of Education

Bessie P. Hanson, R.N., 743 Sixth Ave., Troy, N. Y., Executive Secretary, Rensselaer County Tuberculosis and Public Health Assn.

Leeta A. Holdrege, R.N., 301 City Hall, Omaha, Nebr., Executive Director, Visiting Nurse Association of Omaha

Hetty I. Joach, Rm. 302, Court House, Jefferson City, Mo., County Public Health Nurse

Alice N. Jones, 42 N. Sheridan Ave., Indianapolis, Ind., Supervisor of School Nurses, Indianapolis Board of Health and Charities

Louise J. Keiber, 428 E. 133 St., New York, N. Y., Supervising Nurse, Mott Haven Health Centre

Martha J. Long, Heber Springs, Ark., County Health Nurse

Sadie E. McCarty, R.N., 708 Walnut, Fall River, Mass., Supervisor of Nurses, Board of Health

Clarina H. Morier, R.N., 759 Merrimack, Lowell, Mass., School Nurse, Board of Health

Ethel F. Murray, Hotel Aragon, Madera, Calif., Health Supervisor, Madera County Dept. of Education

Ethel Phillips, 115 E. Church St., Elmira, N. Y., Director, Visiting Nurse & Tuberculosis Assn.

Irma E. Reeve, 35 Elm St., New Haven, Conn., Associate Director, Visiting Nurse Assn. of New Haven

Emma E. Roberts, 332 Boston Place, Toledo, O., Director, Toledo District Nurse Assn.

Lila Sallee, Pocahontas, Ark., Public Health Nurse, Randolph County

Virginia D. Virgin, R.N., State Health Dept., Charleston, W. Va., Associate Director, Bureau of Venereal Diseases

Mary A. Ward, 3209 Delachaise St., New Orleans, La., Field Supervisor, Child Welfare and Community Health Assn.

Blanche Webb, 300 W. York St., Norfolk, Va., Director, The King's Daughters Visiting Nurse Assn.

Public Health Education Section

Embree G. Jaillite, 30 Rockefeller Plaza, New York, N. Y., Director of Publications, Public Health Committee of the Cup and Container Institute

Donald S. Lacroix, 25½ Pleasant St., Amherst, Mass., Hygiene Teacher, Amherst High School

Jacob A. Salzmann, D.D.S., 9915 Herrick Ave., Forest Hills, N. Y., Director, Dental Service, New York City Vocational Schools, Board of Education

Justin J. Shapiro, 707 Broadway, Paterson, N. J.

Epidemiology Section

Dr. Jose A. Lopez del Valle, Linea 78, Habana, Cuba, Director of School Sanitation, Finlay Institute

Roscoe L. Mitchell, M.D., 10 Burleigh St., Waterville, Me., Assistant Director, State Bureau of Health

Aurang Shah, M.D., C.P.H., P. O. Box 211, Boston, Mass., Student, Harvard School of Public Health

Unaffiliated

Harold Abramson, M.D., 1097 Madison Ave., New York, N. Y., Medical Inspector, and Field Epidemiologist, Bureau of Child Hygiene and Bureau of Preventable Diseases, New York City Dept. of Health

George F. Cottle, M.D., U.S.S. Pennsylvania, San Pedro, Calif., Medical Officer, U. S. Fleet

Luis Mazzotti, M.D., Huasteca 311, Mexico City, Mex., Student, School of Hygiene, Johns Hopkins University

Mary C. Raymond, 3307 Prytania St., New Orleans, La.

Howard Weinstein, 358 Ellsworth Ave., New Haven, Conn., Student, Dept. of Public Health, Yale School of Medicine

DEATHS

Jules Constantin, M.D., D.P.H., Roverval, P. Que., Elected Member 1933

Gertrude M. DeWitt, Chicopee, Mass., Elected Member 1920

Andronique Lafond, M.D., D.P.H., Parisville, P. Que., Canada, Elected Member 1933

Leslie Wentzel, Scranton, Pa., Elected Member 1922

CLOSING DATE FOR FELLOWSHIP APPLICATIONS

THE Committee on Fellowship and Membership wishes to announce that September 1 is the closing date for accepting Fellowship applications for action at the New Orleans Annual Meeting. Eligible members who desire to apply for Fellowship this year are requested to submit their applications to the committee as much in advance of September 1 as possible.

ASSOCIATIONS MEETING WITH A.P.H.A. AT NEW ORLEANS

THE following meetings of other associations will be held in New Orleans October 20–23, 1936, at the same time as the Sixty-fifth Annual Meeting of the American Public Health Association.

American Association of School Physicians

American Association of State Registration Executives

Conference of State Laboratory Directors

State Conference of Sanitary Engineers

Association of Women in Public Health

International Society of Medical Officers of Health

NEWS FROM THE FIELD

ANOTHER PUBLIC HEALTH AWARD GOES TO NEW YORK STATE

AT the 51st Annual Conference of the State and Provincial Health authorities of North America, held in Vancouver, B. C., June 22–24, 1936, a testimonial was presented to the New York State Department of Health. The awarding of this testimonial indicated, in the opinion of the Grading Committee, that the staff of the New York State Department of Health had in 1935 done more to develop an interest in the Health Conservation Contests than the staff of any other state department.

A testimonial on the above basis is given annually by the United States Chamber of Commerce. Dr. Arthur T. McCormack, State Health Officer of Kentucky, a member of the Health Conservation Contest Committee, made the presentation, and in the absence of Dr. Edward S. Godfrey, New York State Health Commissioner, Dr. John A. Ferrell accepted the testimonial. In making the presentation, Dr. McCormack stated that, in his opinion, in conducting these Contests the United States Chamber of Commerce and the American Public Health Association had undertaken one of the most inspiring public health activities. The Health Contest for cities and rural communities had already resulted in a great deal of publicity and, through the interest of the chambers of commerce, business men have had their attention definitely directed to the importance of public health. Business men and employers of labor had been impressed in a manner unknown hitherto, and were coöperating in programs for health betterment. The Contests have been the means of putting into actual practice many of the ideas and principles which health workers have discussed, but had never been able in whole or in part to convert into concrete public health advances.

Dr. Ferrell, in accepting the award, stated that New York State, with its large and complex population, had unusual public health problems, but, notwithstanding all this, it compared most favorably with other states in its solution of its problems, and in advances along public health lines. The interest shown in the Contests indicated that the state was ready to give time, thought, and effort to them because they were a specific aid in health promotion.

CRIPPLED CHILDREN DEPARTMENT IN NORTH CAROLINA

THE North Carolina State Department of Health has established a Department for Crippled Children in coöperation with the Children's Bureau of the U. S. Department of Labor, in the administration of the Social Security Act.

Objectives outlined in the bulletin of the health department are to locate crippled children, of whom it is estimated there are about 20,000 in the state; to obtain expert diagnosis in all parts of the state; to provide expert treatment and hospital care; to establish a field of supervisory service and follow-up service, and to engender public interest in the problem of the crippled child.

INDIANA APPOINTMENTS

THE following changes in Health Officers in the Indiana Division of Public Health have been announced:

Dr. Elmer D. Johns, of Zionsville, succeeding Dr. Lawrence S. Bailey as town Health Officer.

Dr. Camden G. Bothwell, of Martinsville, succeeding Dr. George B. Breedlove as Health Officer of Morgan County.

Dr. James L. Denaut, Health Officer of Hamlet.

Dr. Clyde J. Munns, of Newburgh, succeeding Dr. John T. Samples as Health Officer of Warrick County.

CANCER CAMPAIGN IN MAINE

A STATE committee has been formed to carry on a campaign against cancer which was recently launched under the auspices of the American Society for the Control of Cancer, the State Board of Health of Maine, and the Maine Medical Association.

The committee, of which Dr. Magnus F. Ridlon, of Bangor, is chairman, will provide free services of a pathologist, a radiologist, a roentgenologist, and a surgeon.

A woman's "field army" against cancer has been organized; and clinics have been established at Lewiston, Waterville, and Portland.

DIABETES CAMPAIGN IN OHIO

THE Public Health Federation of Cincinnati has recently formed a special committee on diabetes in cooperation with the Academy of Medicine of Cincinnati, with Dr. Cecil Striker as chairman.

The committee plans to establish an information bureau for physicians and the public, to make a study of the morbidity and mortality of diabetes, and to carry on public health education.

AUTOMOBILE VACATIONS

NEARLY 37 million persons in 11 million automobiles took vacations by motor in 1935, says the American Automobile Association.

AUTOMOBILE INSPECTION IN CHICAGO

SINCE July 1, all owners in Chicago, Ill., are required to have their automobiles inspected. This compulsory inspection is expected to reduce accidents by eliminating mechanical defects, and to lessen noise in the city.

Every automobile registered in Chicago must have an inspection twice a year.

CONNECTICUT HEALTH BULLETIN CELEBRATES FIFTIETH YEAR

THE *Connecticut Health Bulletin* celebrated its fiftieth anniversary with the May issue.

The May *Bulletin* reproduces various covers and pages from its earlier issues. The first number appeared in June, 1887, and it has been printed continuously since that time.

MME. IRENE JOLIOT CURIE HONORED

IRENE JOLIOT CURIE, daughter of the discoverers of radium, has been named Undersecretary for Scientific Research in the recently organized cabinet of the French Government.

Madame Joliot Curie, who from her childhood collaborated with the late Madame Curie in her research, shared the Nobel Prize in Medicine in 1935 with her husband, Frederic Joliot, for their work on radium.

PNEUMONIA RESEARCH GRANT

THE Commonwealth Fund of New York has approved an annual grant of $16,800 to the Michigan State Department of Health, Lansing, to promote study of antipneumococcic serum and to reduce the cost so as to make it available to the person of ordinary means. It will continue three years or longer, if sufficient progress is shown. . . . Last year the death rate from

pneumonia in Michigan was the highest since 1929.—*J.A.M.A.*, July 18, p. 219.

EVANSTON WINS SAFETY PRIZE

IN the Fourth National Traffic Safety Contest, sponsored in 1935 by the National Safety Council, Evanston, Ill., won the grand prize for the second time. Its motor death rate was 2.9 per 100,000. The national average for all cities of all population groups was 18.1.

MENTAL HYGIENE EXAMINERS APPOINTED

UNDER the provisions of a law passed by the 1936 legislature establishing a board of qualified examiners in the New York State Department of Mental Hygiene, the following have been appointed to constitute the board:

Dr. Frederick W. Parsons, Commissioner of Mental Hygiene

Dr. Vernon C. Branham, of Woodbourne, appointed by the Commissioner of Correction

Dr. Lloyd H. Ziegler, of Delmar, appointed by the Superintendent of Education

Dr. Israel Strauss, of New York, selected by the Medical Society of New York.

The code of criminal procedure has been amended to require that courts appointing a commission to examine persons charged with crime include at least one qualified psychiatrist.—*J.A.M.A.*, July 11, 1936, p. 137.

FLORIDA MATERNAL AND CHILD HEALTH BUREAU

A BUREAU of Maternal and Child Health in the Florida State Department of Health, Jacksonville, Fla., has been established. Dr. Emile Bryant Woods, Assistant Professor of Obstetrics and Gynecology, University of Georgia School of Medicine, Augusta, Ga., has been announced as the Director.

The new bureau will act in an advisory capacity to city, county, and district health departments, and will sponsor a statewide educational program. It was made possible through funds provided under the Social Security Act.

NETHERLANDS ANTIVENEREAL DISEASE CAMPAIGN

IN the conduct of an antivenereal disease campaign, each country selects a method in keeping with the national character. This explains why in the Netherlands the organization of this campaign is imbued with a spirit of independence and of hatred for coercive measures.

In place of official examinations of the genitalia of prostitutes and the compulsory registration of those infected, a policy based on persuasion and free will has been instituted. This operates through therapeutic stations open during the evening hours. The work of the stations is supplemented by consultation offices and by the coöperating services of women social workers who visit the infected women undergoing treatment.

It is the same approach that has been used with notable success in the fight on tuberculosis. In addition, propaganda against the venereal diseases is carried on through lectures, moving pictures and so on. The results in big cities such as Rotterdam have been most encouraging. — *J.A.M.A.*, July 18, p. 226.

BIRTH CONTROL GROUP ORGANIZED

THE National Medical Council on Birth Control was organized in June, 1936, for these purposes:

1. To control and supervise all medical policies of the American Birth Control League.

2. To initiate, encourage, and execute appropriate scientific research in the medical aspects of birth control.

The Executive Committee of the

Council is as follows: Frederick C. Holden, M.D., Chairman; Eric M. Matsner, M.D., Executive Secretary, member A.P.H.A.; Eliot Bishop, M.D.; A. N. Creadick, M.D.; Foster Kennedy, M.D.; Edgar Mayer, M.D., member A.P.H.A.; Richard N. Pierson, M.D.; Owen Toland, M.D.; Wilbur Ward, M.D.; and Prentiss Willson, M.D.

Headquarters of the National Medical Council on Birth Control are established at 515 Madison Avenue, New York, N. Y.

INSANITY OF WAR

PSYCHIATRISTS warn the world against the surrender of civilization to the insanity of war.

The Netherlands Medical Association, at The Hague, sponsored a document signed by 339 psychiatrists from 30 nations, in which they warn the statesmen of the world against unleashing the "destructive instincts which break loose as soon as the community feels itself threatened by danger."

NEW YORK'S CHILDREN'S CAMPS MUST REGISTER

IN a further effort to safeguard the health of New York City children, the New York Department of Health is requiring every agent, or agency, representing out of town camps for children to register detailed information with the Sanitary Bureau. This includes: a complete description of the camp's sanitary arrangements; description of the source of its milk supply; data on how many children are housed —what examination of food handlers is made before employment—whether the camp is operated under a State permit—whether or not the camp has a resident physician—whether or not a trained nurse is employed, and so forth.

Section 217a of the Sanitary Code provides that—

> . . . All agencies in the City of New York taking children out of town to camps on vacation periods of more than one day shall register annually with the Department of Health of the City of New York through an authorized executive of such agency, stating the name, location and post office address of the camp, name of the director, the license number of the previous year and whether the camp is inspected by the Department of Health of the State where located.

While the majority of out of town camps operating out of New York City are licensed by the respective States, occasionally one is found not to have this protection.

HAY FEVER STUDY

A CHEMICAL study of substances in agricultural products and by-products that contribute to the allergic disturbances—hay fever, asthma, hives, and related afflictions—is being established in the Bureau of Chemistry and Soils of the U. S. Department of Agriculture, it has been announced.

One-tenth of the population of the country suffer seasonal distress or continual discomfort and restricted activity as the result of allergic diseases known by such familiar names as hay fever, pollen fever, rose fever, rose colds, asthma, hives, and so on. These afflictions affect people of all ages. Some individuals suffer from abnormal sensitiveness to certain normal constituents of the pollens produced by many varieties of trees, grasses, and weeds. Similar substances present in common foods, textile fibers, furs, and other farm products are also capable of causing distressing disturbances when absorbed through the skin or the membranes of the respiratory or digestive systems of supersensitive persons.

Chemists and specialists in other lines of scientific investigation will attempt to isolate these offending components and to determine their composition. Dr. Henry Stevens, biochemist of the Protein and Nutrition Division of the Bureau of Chemistry

and Soils is organizing the staff which will undertake the allergen investigation.

SILICOSIS PREVENTION

WHILE expressing gratification over the coöperation of employers in complying with the provisions of the silicosis prevention provisions of the industrial dust-hazard acts which became effective this month in New York State, State Industrial Commissioner Elmer F. Andrews today cautioned employers against final commitment, acceptance, and installation of dust-collecting and eradicating machinery before such machinery had been formally approved by the State Industrial Board.

Commissioner Andrews announced that he would immediately appoint an Advisory Committee to make a comprehensive study of machinery and methods and rules and regulations for the prevention of dust disease hazards, this committee to make recommendations to the Industrial Board which would take final and formal action. He called attention to the fact that the law requires the installation of approved dust-removing devices at the earliest opportunity, but also pointed out the danger of installing machinery which might later fail to meet official approval. While awaiting the action of the Industrial Board on various devices now being manufactured, the Commissioner admonished every employer to "take every reasonable precaution to reduce the dust hazard in his plant."

PERSONALS

WILLIAM H. PARK, M.D., F.A.P.H.A., Biggs Professor of Preventive Medicine and Director of Bacteriological Laboratories, New York University College of Medicine, has been granted a leave of absence for the session 1936–1937, and will retire after that period. Dr. Park has been connected with the University since 1895. He was Professor of Bacteriology and Hygiene from 1900 to 1933, when he received his present title. In the session of 1914–1915 he was Dean of the School of Bacteriology and Hygiene.

Dr. Park, for many years Director of the Department of Laboratories of the New York City Department of Health, reached the retirement age for that position December 20, 1933, but his term was extended, and was again extended June 5, to September 30.

ROBERT H. HAZEMANN, M.D., member A.P.H.A., has recently been made "Chef du Cabinet Technique" of the Ministère de la Santè publique. This is the first time that a secretary with public health training has been appointed.

CHARLES W. MCDONALD, M.D., member A.P.H.A., formerly Director of County Health Work of the Alabama State Department of Health, has been named head of the Gadsden County Health Department, recently organized, with headquarters in Quincy, Fla.

FRANK WINFIELD LAIDLAW, M.D., F.A.P.H.A., of Middletown, N. Y., formerly a District State Health Officer, has been provisionally made District Health Director of the New York State Health Department.

JOHN L. JONES, M.D., member A.P.H.A., of Medina, Ohio, has been appointed Special Investigator in the Bureau of Child Hygiene of the Ohio State Department of Health. He will make a detailed investigation of maternal deaths, in coöperation with the Hospital Obstetric Society of Ohio.

DR. ROBERT V. BOYCE has been named Acting Superintendent of Health of Hartford, Conn., succeeding Thomas F. O'Brien, M.D., member A.P.H.A., who was granted a leave of absence.

VERA H. JONES, M.D., member A.P.H.A., of Denver, Colo., has been named Director of Maternal and Child Health and Care of Crippled Children, under the Colorado State Board of Health and the Social Security Administration.

SAMUEL WEISSROSS, M.D., member A.P.H.A., has been appointed Director of the Bannock County Health Unit, Pocatello, Idaho.

HERBERT A. MCCLURE, M.D., member A.P.H.A., is Health Officer of the newly formed Health Department in Taylor County, with headquarters in Perry, Fla.

CHARLES HOWE ELLER, M.D., DR.P.H., member A.P.H.A., of Charlottesville, Va., has resigned as Health Officer of Albemarle County, to become Assistant Director of Rural Health with the Virginia State Health Department.

DR. JAMES R. KINGSTON, of Deer River, Minn., has been appointed Health Officer of the Northern District of Minnesota, with headquarters in Bemidji. The district is composed of Koochiching, Itasca, Hubbard and Beltrami Counties.

DR. ALICE HAMILTON, of Boston, Mass., F.A.P.H.A., technical adviser on industrial poisons, U. S. Department of Labor, was presented with the National Achievement Award of the Chi Omega Sorority, June 22.

ELLEN C. POTTER, M.D., member A.P.H.A., Director of Medicine of the New Jersey Department of Institutions and Agencies, received the honorary degree of doctor of laws at the annual commencement of the New Jersey College for Women, New Brunswick, N. J., June 6.

MILLARD E. WINCHESTER, M.D., F.A.P.H.A., of Brunswick, Ga., Health Officer of Glynn County, was presented in Superior Court, June 29, with a set of resolutions passed by the grand jury acknowledging his service and that of his staff in achieving national recognition for the Glynn County Board of Health in the Health Conservation Contest sponsored by the U. S. Chamber of Commerce and the American Public Health Association.

JAMES F. EDWARDS, M.D., member A.P.H.A., has retired as head of student health service and the Department of Hygiene, Iowa State College, Ames, Iowa, and is succeeded by Dr. John G. Grant, his assistant for several years.

PHILIP DRINKER, member A.P.H.A., has been promoted from Associate Professor to Professor of Industrial Hygiene, at Harvard University School of Public Health, Boston, Mass.

DR. RICHARD E. SHOPE, of the staff of the Princeton laboratory of the Rockefeller Institute for Medical Research, received a prize of $1,000 awarded by Sigma Xi on the occasion of its semicentennial in June. The award was made in recognition of Dr. Shope's work on swine influenza.

BENJAMIN G. HORNING, M.D., of the Connecticut State Health Department, has been named Superintendent of the Hartford Board of Health.

DR. WILDRIDGE C. THOMPSON, JR., who recently received the Certificate in Public Health at Johns Hopkins University, has been appointed full-time Medical Consultant in Social Hygiene in the New York State Department of Health.

DR. HELEN H. OWEN, of Albany, N. Y., has been provisionally appointed Assistant Director of the Division of Maternity, Infancy and Child Hygiene in the New York State Department of Health. She was formerly on the staff of the Division of Laboratories and Research.

DR. LLOYD A. MASTERSON, of Opelou-

sas, La., for 2 years Director of the St. Landry Parish Health Unit, has been promoted to Director of the Bureau of Maternity and Infant Hygiene of the Louisiana State Board of Health. Dr. Franklin V. Boyd, member A.P.H.A., of Lake Providence, succeeds Dr. Masterson as Health Officer.

DR. WILLIAM DOCK, Associate Professor of Medicine, Stanford University School of Medicine, San Francisco, Calif., has been appointed Secretary of the San Francisco Heart Committee, to succeed Dr. Amos Christie, who has resigned to engage in a two-year study at Johns Hopkins University Hospital for the U. S. Children's Bureau.

DR. WILLIAM BLAIR HUNTER, of Gastonia, N. C., has been appointed Health Officer of Harnett County.

DR. WILLIAM J. DONALD, of Lafayette, Ala., has been named Health Officer of Baldwin County, to succeed Dr. Stephen A. Durick, of Bay Minette, resigned.

RUTH HAY, who has been Assistant Professor of Public Health Nursing at Western Reserve University, has accepted a position as Director of the Course in Public Health Nursing in the School of Nursing at the University of California, Berkeley, Calif.

DR. WILLIS D. GILMORE, of Tombstone, Ariz., has been appointed Tuberculosis Consultant of the Department of Health of Arizona.

DR. JACK B. EASON, of Tucson, Health Officer of Pima County, Ariz., has been placed in charge of the new health unit in Yuma County.

DR. LEWIS C. ROWLES, of Clearfield, Pa., has been appointed Medical Director of Clearfield County, to succeed Dr. Horatio L. Woodside, of Bigler, member A.P.H.A., resigned.

DR. CHARLES E. LYCHT, Assistant Professor of Medicine and acting chief of student health, University of Wisconsin Medical School, Madison, Wis., has been appointed Professor of Health and Director of Physical Education for Men at Carleton College, Northfield, Minn.

DR. LOUIS TUFT has been appointed to succeed Dr. John L. Laird as head of the laboratory in the Pennsylvania State Department of Health.

DR. WILLIAM D. JENNINGS, JR., of Augusta, Ga., has been appointed to the newly created position of Police and Fire Surgeon.

DEATHS

DR. ARTHUR JACOB WOLFF, of Hartford, Conn., died June 22, at the age of 81 years. He was a bacteriologist in the Hartford Health Department for 32 years.

CLINTON T. MESSNER, D.D.S., chief of the Dental Department, U. S. Public Health Service, since 1924, died in Washington May 28.

CONFERENCES AND DATES

Aug. 2–8, Annual Meeting, National Institute for Commercial and Trade Organization Executives, Northwestern University, Evanston, Ill.

Aug. 11–14, American Veterinary Medical Association, Deshler-Wallick Hotel, Columbus, Ohio

Aug. 16–22, National Medical Association, Philadelphia, Pa.

Aug. 16–22, Annual Convention, National Hospital Association, Philadelphia, Pa.

Aug. 17–18, American City Planning Institute, Cambridge, Mass.

Aug. 18–20, League of Iowa Municipalities, Davenport, Iowa.

Aug. 19–21, Annual Meeting—Central States Section, American Water Works Association, Hotel Cleveland, Cleveland, Ohio

Aug. 22, National Conference on Pharmaceutical Research, Dallas, Tex.

Aug. 24–25, American Association of Colleges of Pharmacy, Dallas, Tex.

Aug. 24–29, Symposium on the Environment and Its Effect Upon Man, at the Harvard University School of Public Health, Boston, Mass.

Aug. 24–29, American Pharmaceutical Association, Dallas, Tex.

Aug. 28, Twelfth Annual Convention, California Dietetic Association, Fairmont Hotel, San Francisco, Calif.

Aug. 29–Sept. 6, Third Postgraduate Course of the International Hospital Association, Prague, Czechoslovakia.

Aug. 31–Sept. 5, Second International Medical Week, Lucerne, Switzerland, sponsored by the *Swiss Journal of Medicine*.

Aug. 31–Sept. 12, Harvard Tercentenary Conference of Arts and Sciences, Cambridge, Mass.

Sept. 1–4, Annual Conference, Governmental Research Association, Ann Arbor, Mich.

Sept. 2–4, Annual Convention, National Shade Tree Conference, Hotel Statler, Boston, Mass.

Sept. 2–4, Annual Convention, Union of Nova Scotia Municipalities, Digby, Nova Scotia.

Sept. 2–4, Annual Meeting, Ontario Municipal Association, Toronto, Ont.

Sept. 7–10, International Union Against Tuberculosis, Lisbon, Portugal.

Sept. 7–11, Sixtieth Anniversary Meeting, American Chemical Society, Pittsburgh, Pa.

Sept. 7–12, Third World Power Conference, National Power Policy Committee, Department of the Interior Building, Washington, D. C.

Sept. 9–12, Annual Meeting, American Forestry Association, Hotel Lakeside, Eagles Mere, Pa.

Sept. 14–17, Annual Convention, League of California Municipalities, Santa Monica, Calif.

Sept. 14–17, Annual Meeting, California Sewage Works Association, Santa Monica, Calif.

Sept. 15–30, First International Congress of Sanatoria and Private Nursing Homes; Margitsziget, Sanatorium, Budapest, Hungary.

Sept. 21–23, Annual Convention, American Institute of Park Executives and the American Park Society, South Bend, Ind.

Sept. 21–23, Annual Meeting, Rocky Mountain Section—American Water Works Association, Denver, Colo.

Sept. 22–25, Annual Meeting—New England Water Works Association, Pennsylvania Hotel, New York, N. Y.

Sept. 23–25, Annual Meeting of the New York State Association of Dairy and Milk Inspectors, Van Curler Hotel, Schenectady, N. Y.

Sept. 23–26, Mississippi Valley Conference on Tuberculosis, The Mississippi Valley Sanatorium Association, Hotel Pere Marquette, Peoria, Ill.

Sept. 24–25, Annual Meeting, League of Wisconsin Municipalities, Manitowoc, Wis.

Sept. 28–30, Public Works Congress—American Society of Municipal Engineers—International Association of Public Works Officials, Toronto, Ont.

Sept. 28–Oct. 1, American Society of Municipal Engineers, Toronto, Ont., Canada.

Sept. 28–Oct. 2, American Hospital Association, Cleveland, Ohio

Sept. 28–Oct. 2, American Association of Port Authorities, San Francisco, Calif.

Oct. 1–3, Southern Tuberculosis Conference, Hot Springs, Ark.

Oct. 5–9, Annual Safety Congress and Exposition, National Safety Council, Atlantic City, N. J.

Oct. 6–12, Fire Prevention Week.

Oct. 9, 10, New York State Sewage Works Association, Geneva, N. Y.

Oct. 10–18, National Dairy Show, National Dairy Association, Dallas, Tex.

Oct. 12, 13, Canadian Dental Association, Montreal, Que.

Oct. 12–15, Annual Convention—Southwest Section, American Water Works Association, Fort Smith, Ark.

Oct. 12–17, The Dairy Industries Exposition, Atlantic City, N. J.

Oct. 12–18, Third International Congress on Malaria, Madrid, Spain.

Oct. 14–16, Annual Convention, Pennsylvania Water Works Association, Haddon Hall, Atlantic City, N. J.

Oct. 14–17, Annual Civil Service Assembly of the United States and Canada, Cincinnati, Ohio.

Oct. 17–25, Centennial Exposition Dairy Show, Atlantic City, N. J.

Oct. 19–20, Conference of State Sanitary Engineers, New Orleans, La.

Oct. 19–21, Annual Meeting, International City Managers' Association, Richmond, Va.

Oct. 20–23 (Tues., Wed., Thurs., Fri.), Sixty-fifth Annual Meeting of the American Public Health Association, New Orleans, La. Meetings Headquarters, Municipal Auditorium; Residence Headquarters, Hotel Roosevelt.

Oct. 20–23, American Association of School Physicians, Hotel Roosevelt, New Orleans, La.

Oct. 20–23, American Association of State Registration Executives, New Orleans, La.

Oct. 20–23, Conference of State Laboratory Directors, New Orleans, La.

Oct. 20–23, State Conference of Sanitary Engineers, New Orleans, La.

Oct. 20–23, Association of Women in Public Health, New Orleans, La.

Oct. 20–23, International Society of Medical Officers of Health, New Orleans, La.

Oct. 21–23, Ontario Hospital Association, Toronto, Ont.

Oct. 21–24, Annual Civil Service Assembly of the United States and Canada, Cincinnati, Ohio

Oct. 26–28, Annual Meeting—Missouri Valley Section, American Water Works Association, Kansas City, Mo.

Oct. 26–28, National Association of Exterminators & Fumigators, Cleveland, Ohio.

Oct. 26–28, Annual Meeting, North Carolina Section—American Water Works Association, Hotel Charlotte, Charlotte, N. C.

Oct. 26–30, National Rehabilitation Association, San Antonio, Tex.

Oct. 29–31, Annual Meeting of the Association of Military Surgeons, Detroit, Mich.

Nov. 8–11, Annual Meeting, National Association of Commercial Organization Secretaries, Omaha, Nebr.

Nov. 9–12, Association of Dairy, Food and Drug Officials of the United States, Miami Biltmore Hotel, Coral Gables, Fla.

Nov. 9–15, American Education Week. Write: Educational Press Assn., N. J. *Educational Review*, 605 Broad Street, Newark, N. J.

Nov. 11–13, Refrigeration Service Engineers Society, Hotel Gayoso, Memphis, Tenn.

Nov. 17, 18, Fifth Annual Meeting of the Southern Branch, American Public Health Association, Baltimore, Md.

Nov. 17–20, Southern Medical Association, Baltimore, Md.

Nov. 20, 21, Sixty-Second Annual Meeting, New Jersey Health and Sanitary Association, Inc., Hotel Woodrow Wilson, New Brunswick, N. J.

Dec. 3–5, New Jersey Conference of Social Work, Asbury Park, N. J.

Dec. 28–30, Society of American Bacteriologists, Indianapolis, Ind.

Dec. 28, 1936–Jan. 1, 1937, American Association for the Advancement of Science, Atlantic City, N. J.

Dec. 28–31, Second National Confer-

ence on College Hygiene, Wardman Park Hotel, Washington, D. C.

Jan., 1937, California Society for Crippled Children, San Francisco, Calif.

Feb., 1937, County Engineers of California, Sacramento, Calif.

Feb. 20–25, 1937, National Association of State Directors of Educational Research, New Orleans, La.

Mar. 25–26, 1937, Western Shade Tree Conference, Santa Barbara, Calif.

Apr., 1937, Arizona State Public Health Association, Phoenix, Ariz.

Apr. 21–24, 1937, Society of State Directors of Physical and Health Education, New York, N. Y.

Apr. 21–24, 1937, American Physical Education Association, New York, N. Y.

Apr., 1937, California Tuberculosis Association, Riverside, Calif.

May, 1937, Association of Coroners and Public Administrators, Oakland, Calif.

May 23–29, 1937, National Conference of Social Work, Indianapolis, Ind.

May 31–June 3, 1937, National Tuberculosis Association, Milwaukee, Wis.

June, 1937, Eighth Annual Meeting of the Western Branch, American Public Health Association, Phoenix, Ariz.

June, 1937, Smoke Prevention Association, New York, N. Y.

June, 1937, Conference of Mayors and Municipal Officials, Saratoga Springs, N. Y.

June 7–11, 1937, Eighty-eighth Annual Session of the American Medical Association, Atlantic City, N. J.

June 21–26, 1937, American Association for the Advancement of Science, Denver, Colo.

July, 1937, Silver Jubilee Boy Scout Jamboree, Boy Scouts of America, Washington, D. C.

April, 1938, American Chemical Society, Dallas, Tex.

THE AMERICAN

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AN INDEX

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